Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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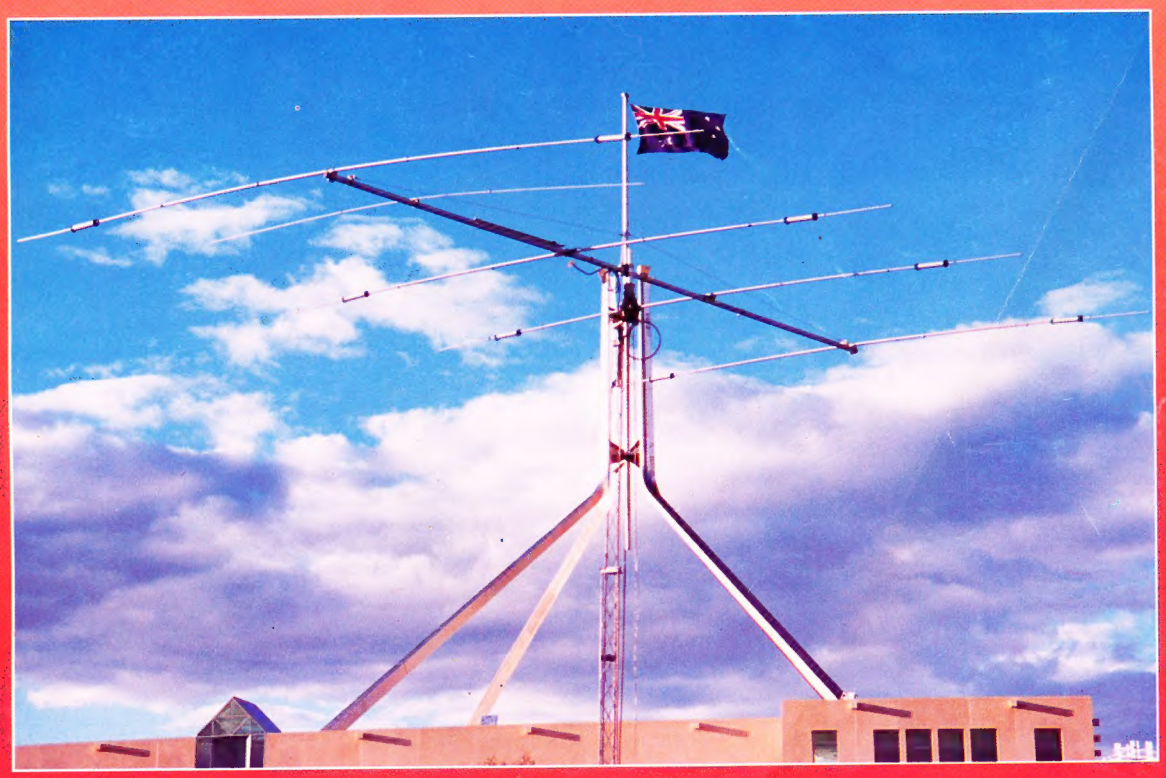

OPENING OF PARLIAMENT HOUSE — CANBERRA

TWO METRES FOR THE NEWCOMER

EQUIPMENT REVIEWS

Made in Australia TET-EMTRON ANTENNAS

Dr MAC TANIGUCHI of TET Japan has now joined EMTRON INDUSTRIES and improved his already famous "phase-feed" matching system based on the "HB9CV" concept. This new matching system provides an increase in gain, roughly comparable to adding another element to the antenna, while significantly improving the front to back ratio. The performance exceeds even conventional YAGI-UDA design and these new TET-EMTRON multiband beams exhibit extremely flat VSWR over a wide frequency range.

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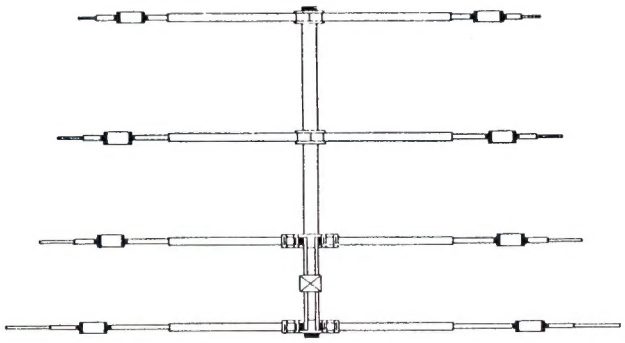
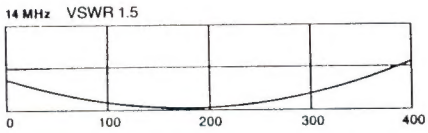
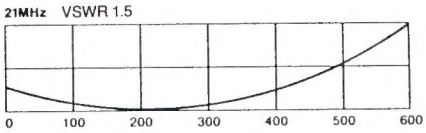
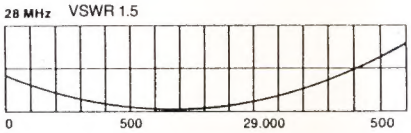


SPECIFICATIONS:

	HB33DX	HB43DX
Frequency	14/21/28 MHz	14/21/28
No of Elements	3/3/3	4/4/4
Gain (dBd)	8.5/8.7/8.3	9.4/9.5/9.8
F/B Ratio (dB)	22/24/21.5	24/24.7/22
VSWR	1.5 or better	1.5 or better
Power Rating	2 kW	2 kW
Impedance (ohm)	50	50
Element Length (metre)	8.25m	8.25m
Boom Length (metre)	4.0m	6.0m
Turning Radius (metre)	4.54m	5.1m
Wind Surface Area (m^2)	0.58m^2	0.74m^2
Wind Load (EIA STD 80 MPH)	56.7 kg	72.7 kg
Weight (kg)	15 kg	19.2 kg
Price incl balun	**$479**	**$579**







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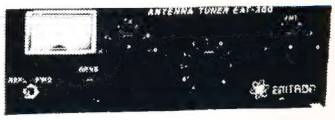

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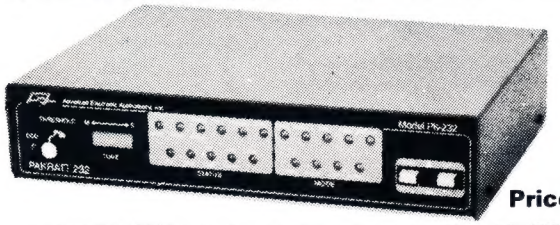

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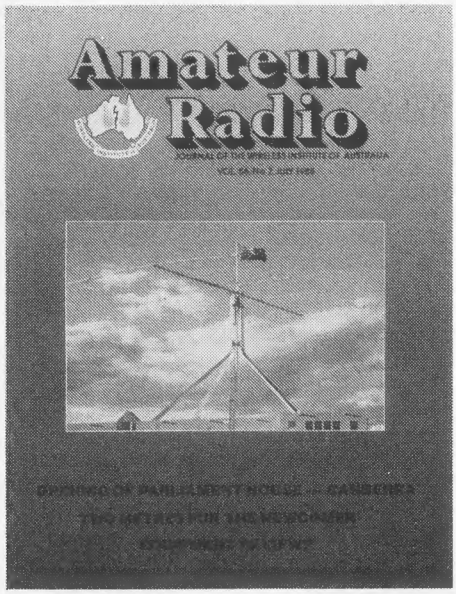

The VI88ACT Yagi Antenna. (Is it a five element 160 metre beam on top of the Parliament House Flag Mast?) Actually, VI88ACT was located about 100 metres to the south of the mast and it is an optical illusion that the Yagi appears to sit on top of the controversial 85 metre high flag mast!
—Photograph courtesy Dan Steiner VK1ST

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Editor's Comment

NOVICES ON TWO

By the time you read this it will be almost a month since June 1, the day from which VK Novices are permitted to operate (FM voice only) between 146 and 148 MHz. Welcome to Two FM, all you Novices old and young!

Unfortunately, not everyone seems to be as happy about this as the Novices are. In fact, I understand that there are even some Novices who are not as jubilant as might be expected. And in both cases (Novice on one hand, Limited or Full on the other) the reason seems to be the same, an alleged loss of incentive. Rather than go into details at this stage, I would like to refer you to a letter in this issue in "Over to You!" from Clive Wallis VK2DQE. He claims (rightly, I'm sure) that it represents the feelings of many Full and Limited Call operators. This being the case, it seems to me that even after all the surveys and discussions of the last 12 months, perhaps many people still are not fully aware of the facts.

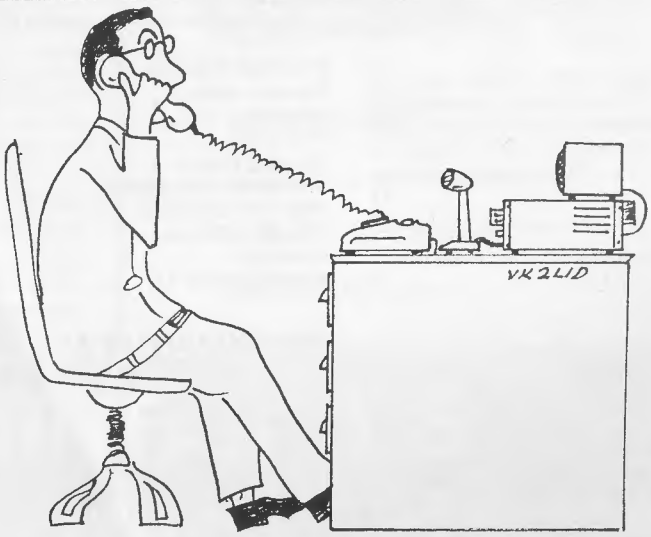
First and foremost, the purpose of getting Novices on to VHF is to enable them to talk to Limiteds. Years ago it was seen to be almost ridiculous that two sizable groups of the AR fraternity, many belonging to the same Institute, could not talk to each other on any amateur band. It has been WIA policy, almost as long as there has been a Novice class, that there should eventually be a common band available to all licence classes. The only question has been "what band will it be?". Obviously, it either had to put Novices on VHF or Limiteds on HF. The latter is contrary to ITU regulation (the dreaded Morse code), so it had to be Novices on VHF (or UHF).

In spite of what Clive says, DOTC did in fact have a large input into the choice of band, and much preferred two metres to 70 cm. From the viewpoint of "where's the action?" there is no doubt that it's on Two FM, and the equipment is cheaper (and easier to homebrew, for those Novice constructors whose only problem is the code). Ultimately, there really was little choice. As the DOTC spokesman said, whatever they did there would be some who would be unhappy about it!

Not this suggestion of only giving Novices a 500 kHz bandwidth. The purpose is to be able to talk to many other amateurs, not to introduce a "Novice ghetto" in some lightly populated part of the band. So it must be FM and repeaters. All repeaters, not just those (say) in the top 500 kHz! This would discriminate against those whose local repeater was not in the selected segment.

Degrading the Full Call? No incentive to upgrade? The only thing the Novice now has that he/she didn't have before is the ability to talk to VHF/UHF enthusiasts and find out what they're still missing. They can't use RTTY, ATV or packet. They can't use SSTV or work through satellites. They still can't use the mainstream bands, 7 and 14 MHz, or the WARC bands. They're restricted to 30 watts PEP, and only 10 watts on two metres FM. They still have a great incentive to upgrade! And now they can talk to even more people who can help them to do it! I don't think my Full Call is thereby degraded. I only wish I had the time to have a go at all it permits me to do!

Bill Rice AX3ABP
Editor



"You're 5/9 OM — Now let's try it on the radio!" — VK2COP

Main QSP

At the recent Federal Convention, one of the working parties devoted some hours to discussions of ways to recruit new amateurs and to increase the number of members of the Institute.

Ways of attracting newcomers to amateur radio have been considered by a number of bodies and in a number of publications, and we all have our own ideas of the most productive methods and the group/s to which our efforts should be directed.

I think we all accept that continuation of our privileges, especially spectrum space, depends largely on the steady inflow of new operators to maintain or increase usage of the bands. We cannot continue to lay claim to hands which are unused or underused in the face of the increasing commercial pressure for frequency allocations.

It was interesting to hear the proposals for ways to increase Institute membership, and to hear other views on reasons for joining. For some, membership is seen as a duty or an obligation incurred when one becomes licensed, in similar vein to joining a trade union or professional body on completing a qualification.

Others saw their membership as a way of "paying for" their privileges and ensuring their continuation, or as some sort of "balance sheet" which squares off the membership fees against services provided by the Institute.

Several suggestions were made for active recruiting campaigns, especially through the numerous localised clubs. Club members are easily approached and if the club is genuinely backing the Institute, it should not be too difficult to have almost 100 percent WIA membership.

It is harder, however, to reach the operators who are not club or group members, who do not have regular contact with other amateurs. As in many other situations, the isolated amateur is at a disadvantage, and gains less benefit from the membership then the suburban amateur.

It may be that these amateurs are the ones who have most need for the Institute, for it to become their "local club".

Can the Divisions extend their services so that the distant ones feel that they are really part of what is happening?

One of the main arguments in favour of membership is that increased membership should allow better service to all. It may even slow down the rate of increase of fees.

Much of the Institute's budget is spent on services where the cost is not proportional to the number of members.

For example, the cost to send a delegate to the Region 3 IARU Conference later this year will be the same whether we have 30 percent membership or 80 percent. Similarly, the office and telephone rentals are fixed.

The cost of the magazine, however, does depend on the number of members, So with more members, a smaller fraction of each fee goes to the fixed costs.

It is very difficult to put any sort of monetary value on many of the services provided to members. For example, what is the value of the WARC bands, 10 MHz and 18 MHz, to the average amateur? (Is there an average amateur?) How do you value the availability of repeaters? I know I personally was very pleased to be able to call for help from the car one wet night when the windscreen wipers gave-out. I can repay the cost of the phone call, either in person or by helping someone else when the opportunity arises, but some of my membership fee went towards that repeater, and I am grateful that it was available.

The final argument is, of course, that the more members, the stronger the Institute's voice when protesting an injustice or lobbying for a change or increase in privileges. This is as true at the international level as within Australia.

There are always new issues arising where it is necessary for the Institute to take a stand on behalf of all amateurs.

It makes for a much firmer stand if all amateurs are working on behalf of the Institute.

Brenda Edmonds VK3KT
Federal Education Officer and
Federal Executive Member

VISITOR FROM JAPAN

A very pleasant evening was organised by Eric VK5EZ, on May 2, 1988, to welcome visiting amateur, Gus JH4UQC, from Japan.

Gus Okazaki is a medical doctor in Hiroshima, specialising in skin diseases. Eric has had regular weekly CW scheds with Gus since 1983.

During his brief visit to Australia, Gus stayed with VK4DXC of Nambour, and VK2OG in Sydney before his three-day visit to Eric.

—Contributed by Eric Hauber VK5EZ

Standing from left: Gus JH4UQC, Roy VK5PG, George VK5BGL and Doug VK5MN. Seated: Eric VK5EZ, Darcy VK5RJ and Harold VK5NJG.

OPENING OF PARLIAMENT HOUSE — CANBERRA

Dan Steiner VK1ST
PO Box 24, O'Connor, ACT. 2601

Amateurs around Australia and the world joined in celebrating the opening of Australia's magnificent new Parliament House in Canberra on May 9, 1988.

The new Parliament House, home to Australia's Federal Government, was opened by Her Majesty, Queen Elizabeth II.

The WIA, ACT Division, obtained permission from the Joint House Department, which manages Parliament House, to set up a temporary amateur radio station at the site to join in the Opening Day celebration.

Operating with the call sign VI88ACT, from one of the temporary site sheds, used during construction of Parliament House, the ACT Division set up two HF stations. One used an HF five element triband beam atop a portable 35 feet tower on the 20, 15 and 10 metre bands: the other used dipoles for 80 and 40 metres. The station operated continuously from 0900 UTC, May 8 to 1400 UTC, May 9, 1988 and made 440 contacts including 73 prefixes and 16 countries. SSB, CW, RTTY and AMTOR modes were used.

A special QSL card for the Parliament House Opening will be sent to all stations which made contact with VI88ACT that day.

A special feature was the re-broadcast (live) of the Queen's Opening Speech on the 80, 40, 20 and 15 metre bands. This was achieved by relay of the speech from Parliament House using a two metre FM transmission to the QTHs of several Canberra amateurs who then re-broadcast the Speech onto an HF band from their home station. Prior approval from DOTC and others involved was generously provided. Those receiving the broadcast relay by amateurs gratefully acknowledged the efforts of the numerous volunteers. Replies afterwards were received from around Australia, New Zealand and several DX stations.

An unexpected reply came from Rob VK1KRM, who was attending the Opening, along with about 30 000 other spectators outside Parliament House. Unable to hear the speech on the Public Address system because of the noise from a helicopter overhead, Rob listened to the two metre relay on his hand-held and even turned up the volume so others nearby could enjoy the auspicious occasion, too.

Those involved has an enjoyable day. The ACT Division gratefully acknowledges the following amateurs for the loan of equipment, and assisting with the set-up and operation of VI88ACT at the Parliament House Opening: VK1s: ST, PJ, GB, WX, EG, FM, DH, DO, VB, RH, KV, EP, LF, KCM, KEN, KED and KIN.

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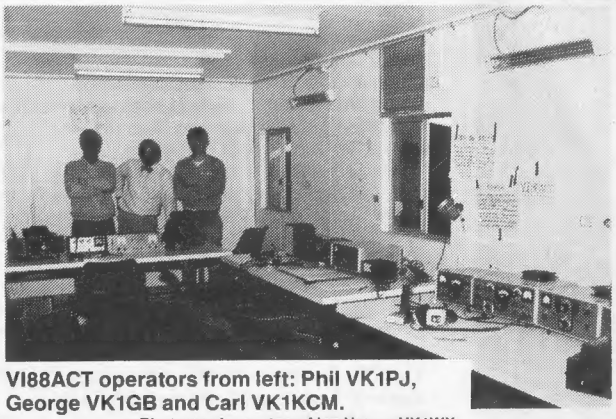


VI88ACT operators from left: Phil VK1PJ, George VK1GB and Carl VK1KCM.
—Photograph courtesy Alan Hawes VK1WX

Some of the VI88ACT set-up team: (from left) Alan VK1WX, Phil VK1PJ and Carl VK1KCM.
—Photograph courtesy George Brzostowski VK1GB

TWO METRES FOR THE NEWCOMER

With the introduction of two metres as the common band for all amateurs regardless of grade of licence, a short article to help the newcomer get started seems timely. The author had his first QSO on this band over 27 years ago and still considers it one of the most enjoyable bands to operate on.

Ron Cook VK3AFW
7 Dallas Avenue, Oakleigh, Vic. 3166

THE BAND

GROUNDWAVE.
The coverage obtained by the groundwave is normally the same during daylight or darkness. It is dependent on the power used at both ends of the path, the antenna system gain, the local topography, receiver sensitivity and bandwidth. The range that can be expected with 10 watts, simple antenna with a clear sight-line to the horizon and essentially flat open country between stations using a typical modern commercial FM transceiver can be estimated from Table 1. If both stations have masts five metres high and both are 45 metres above sea-level, then the table shows a line of sight of 25.3 kilometres for the antenna height of 50 metres. Thus both stations could be 50.6 kilometres apart for mutual line of sight. Because of normal refractive effects of the atmosphere, the radio horizon will be some 30 percent greater thus these two stations could be about 66 kilometres apart for line of sight conditions. This might be extended some 50 percent before the signal begins to get down to the noise level.

In other words, in open low lying country, two moderately elevated novice stations can expect a 100 kilometre range. This will be reduced to perhaps 30 kilometres for average suburban terrain and in the case of obstruction by large buildings, hills or a valley location, the range may be reduced even further. Antenna elevation is important, the distance covered is approximately proportional to the square root of the height of the antenna.

There will be no fading or static as occurs on 80 metres. Some variation in signal strength will be noticed in the vicinity of airports due to the direct signal and reflections from aircraft combining and some ignition interference will be heard from nearby vehicles. Otherwise, signals are usually "crystal clear".

EXTENDED GROUNDWAVE. Certain weather conditions cause VHF signals to be bent at a radius close to that of the earth, hence causing the groundwave signal to propagate considerable distances. Distances of up to 400 kilometres are occasionally possible for 10 watt stations with modest installations. With beams and higher power 3000 kilometres has been spanned. When these openings occur they are usually associated with a strong, slowly moving high pressure region centred to one side of the direct path between the two stations. These openings are characterised by the band initially opening up in the early evening and building to a maximum late at night or early in the morning. Often the best signals occur next morning around local sunrise, so there is usually plenty of time for QSOs to be made. Slow fading with a period of several minutes often occurs, so if a station fades out keep trying as it will usually come back in. Some of the best openings last for days, with repeats about a week later as the next high pressure cell moves east. Signals are often very strong and appear to be close to the free space level.

IONOSPHERIC PROPAGATION.
Yes, the ionosphere works for two metres too. During the summer months, sporadic E openings occur on two metres. The openings can last from a few seconds to over an hour. Heavy and rapid fading can occur, especially when the band is opening or closing. Signals can be very strong and a 10 watt station can make contacts in the region of 1000 to 2000 kilometres with only a groundplane antenna. VK7 to VK4 contacts have been made using 2.5 watts FM to a groundplane on a car roof. Unfortunately, these openings are not common.

OTHER MODES. In Northern Australia, Trans-Equatorial Propagation (TEP) can provide many contacts into Japan on two metres, and again low power can make the grade when conditions are right. Other modes such as Aircraft Enhancement, Meteor Scatter, Moon Reflection (EME) require high power and/or high gain antennas and are usually only possible on SSB and CW.

REPEATERS. For mobile operation, distances of only five to 10 kilometres may be achieved in built-up areas. To overcome this, remote receivers and associated transmitters are set up on high points near major population centres. The mobile's signal is readily heard on the mountain top by the receiver which uses the recovered audio to modulate a transmitter 600 kHz higher or lower in frequency. Other mobile stations can readily hear this retransmitted (repeated) signal, hence mobile to mobile contacts over distances of 100 kilometres are easily attained. The range can vary according to local terrain, the repeater location, it's power, antenna gain, etc, but distances of 600 kilometres are achieved with enhanced propagation quite frequently and up to five times this on rare occasions. The power of the mobile station need be only sufficient to reach the repeater whose transmitter may span mountain ranges with

Table 1: Line-of-Sight Distances.
A pair of 10 watt VHF stations with simple vertical antennas will readily communicate over a path equal to twice the line-of-sight path provided there are no obstructions of size along the path. Signal strengths should be very solid over these paths but would fall steadily beyond them. The distances given in the table are calculated from exact formulae and assume that the earth is smooth and that no atmospheric bending of the radio wave occurs. In practice, the atmosphere normally extends the radio horizon by some 30 percent.

QTH ALTITUDE (metres)	DISTANCE TO RADIO HORIZON (kilometres)
5	8.0
10	11.3
15	13.8
20	16.0
25	17.9
30	19.6
35	21.1
40	22.6
45	24.0
50	25.3
60	27.7
70	29.9
80	31.9
90	33.9
100	35.7
200	50.5
300	61.9
400	71.4
500	79.9
600	87.5
700	94.5
800	101.0
900	107.1
1000	112.9
1200	123.7
1400	133.6
1600	142.8
1800	151.5
2000	159.7

ease. The location of the repeater at 300 or more metres above the surrounding terrain is the most significant factor in improving the system performance.

When stations work through the repeater, it should be remembered that it is the repeater that is doing the work and that the received carrier is that of the repeater and not of the remote signal. Thus, if you are near line of sight to the repeater, all signals will be "40 over 9" as far as the S-meter indication goes, even when they are barely readable. The signal to noise ratio is the only guide to signal strength. Weak signals sound noisy whilst strong ones have no noise and are said to be "fully quieting".

THE TRANSCEIVER

There are three common brands of commercial units — Icom, Kenwood and Yaesu. Whether you buy new or secondhand depends on your inclination and budget. It is preferable to get a set which is synthesised and has 5 kHz steps as otherwise you will not be able to use all the repeaters or simplex channels available. The repeaters are allocated channels in 25 kHz steps and, while there are designated calling channels (146.500, 146.550 MHz) you may use any frequency outside the repeater allocation for simplex operation (all stations on the one frequency, no repeater offset involved, similar to HF operation).

Buying secondhand equipment involves some risk so it is advisable to have some assistance from an experienced amateur if making a private purchase. Ask for a demonstration and permission to test the set at the seller's QTH before agreeing to buy it. Establish the set's history: has it been serviced or modified in any way. "Improvements" often aren't and can introduce their own problems. A missing or obliterated serial number suggests the unit may have been obtained by illegal means! Most WIA Divisions maintain a stolen equipment register to help trace stolen equipment — check with them if in doubt.

Badly scratched paint-work, rust or corrosion, a tangled microphone cord and missing screws are all signs of neglect or abuse. Take the covers off and check inside for modifications or badly executed repairs. A dirty, stained circuit board can spell trouble later. Facilities other than frequency selection, repeater/simplex operation switch, received audio level and squelch are bonuses but not essential. It is useful to have several memories (you will rarely have enough) as is the ability to check the repeater input frequency (called reverse) to see if the other station can be worked on a direct path. Some models have established a bad reputation for problems due to dry joints and aging of components in the Phase Locked Loop (PLL) leading to intermittent operation.

Some indication of received signal strength and output power is quite useful, the former is especially so for a hand-held unit to enable the most favourable position to be found when working a repeater or higher powered station.

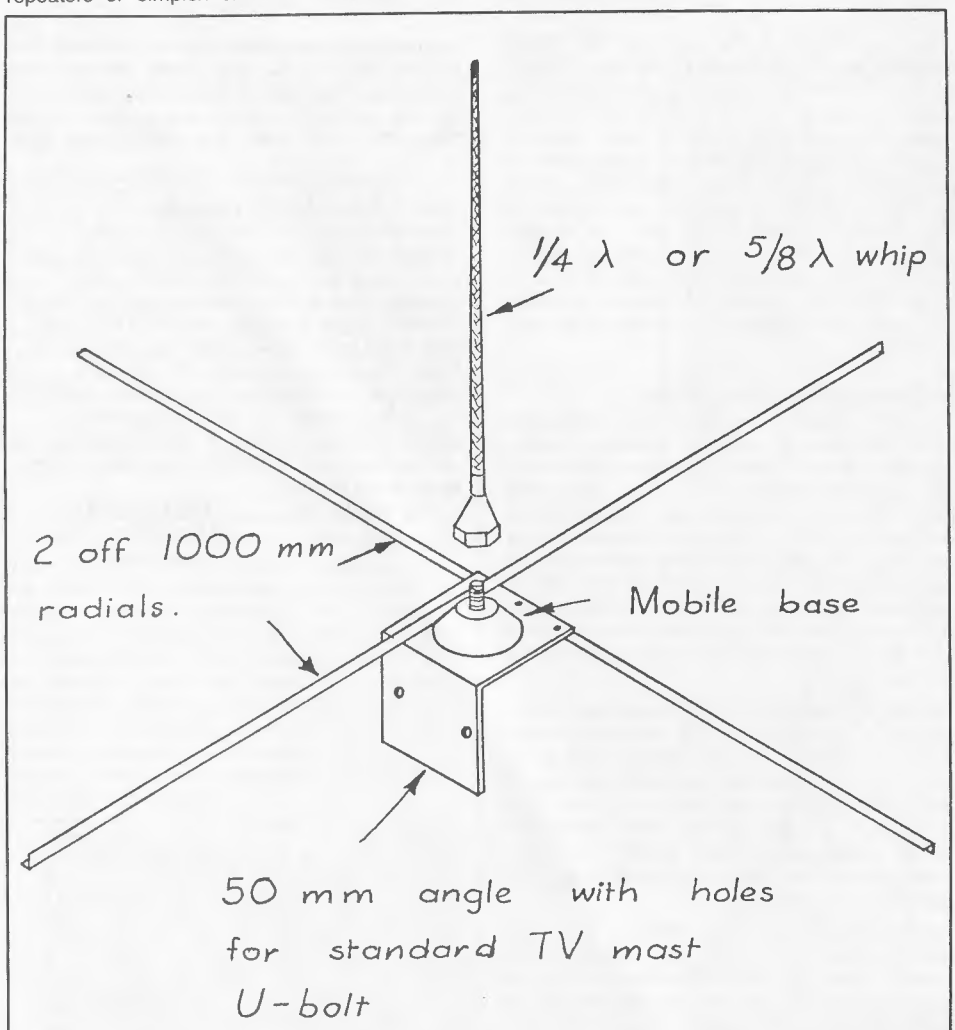


Figure 2: Home-Brew Vertical for Two Metres.
This antenna uses some commercially available parts and can be built in an hour. It features aluminium angle rivetted together to make a groundplane and a mobile whip and base combination. A length of water pipe or a television barge-board mounting mast is suggested for holding the antenna erect.

THE ANTENNA SYSTEM

Because the wavelength is so much shorter than any HF band, the adjustment of the antenna is much more critical. Element lengths must be cut to within three millimetres for best performance. Feedline losses are much greater. Any old piece of coaxial cable will not do. The antenna system is the heart of the station so it must not be neglected. A 10 watt station very quickly becomes equal to a one watt station if care is not taken. As feedline losses apply equally to both received and transmitted signal if you set is reduced to one watt output, then the other operator is, in effect, also reduced to one watt. It is a common error to think that losing, say, 10 dB of power only matters for high power operation. The effect is not power dependent. The only difference is that the feedline gets hotter with higher power.

A suitable antenna can be purchased from most equipment suppliers or one can be built using some purchased parts and a little ingenuity for a few dollars. Either a groundplane or a halfwave vertical is recommended. These are inexpensive, light and give acceptable performance. They have an omni-directional pattern so you will not miss out on hearing stations hidden in nulls as can occur with beams and no rotator is required. The antenna can be mounted on a standard television barge board mount, on a short television type mast on a chimney or on a standard seven metre long piece of 25 millimetre galvanised water pipe.

If you are interested in home-brew, the antenna shown in Figure 1 is easy to construct and install. It used a short length of 50 millimetres aluminium angle to which is fitted a standard mobile roof mounting VHF whip base. These are available from some of the AR advertisers and can be purchased with four metres of RG-58 CU cable complete with a connector. To extend the feedline, a lower loss cable is recommended. The groundplane is made up of two halfwave radials symmetrically fitted to the larger angle. Aluminium angle of up to 12 millimetres width is suitable and this can be bolted or pop-rivetted to the larger angle. If other material of different thickness is used, the length should be made five percent longer than a resonant length at 147 MHz.

The antenna whip can be purchased ready to cut down to resonance. The tuning process is dealt with later. Either a quarter-wave or five-eighth wave vertical can be used. The five-eighth is preferred as it has about 2 dB gain over the quarter wave.

The feedline should be RG-214 or equivalent. Beware of low cost "RG-8" as while this ought to

be much the same as RG-214, it often has a very open braid and mediocre dielectric resulting in quite a few dB loss in a typical two metre installation. RG-58 has similar identification problems and has a higher loss anyway. Unfortunately, it is legal to sell cable labelled as RG-8 or RG-58, but which has very much higher losses at VHF. Often it is usable at 27 MHz, but is virtually useless at 146 MHz. Even the genuine RG-58 is definitely not recommended if the total run exceeds 10 metres. Indeed the small saving made in using thinner cable in a home station is very false economy. In a mobile situation, the length will not usually exceed four metres and the thinner more flexible RG-58 type cable is about all that can conveniently be fitted into most vehicles. In this case the compromise is acceptable.

Increasing the height of the antenna and using a beam will, both increase the station's performance, but until the newcomer has learned more about the band and settled on operating habits, "neither course are recommended". Masts higher than eight metres or antenna installations on building exceeding the common suburban television installation size usually require council permits.

OPERATING TECHNIQUES

Simplex operation is much the same as HF. Select a clear channel outside the Repeater Allocation and call CQ. Better results are likely if you can use one of the standard calling frequencies and then move to another simplex frequency.

Because the FM signal has a deviation of, typically, 5 kHz the holder of an NAOCP licence definitely should not operate any closer than 5 kHz to the band edges, ie confine operation in the range 146.005 to 147.995 MHz.

Repeater operation is much different. Firstly, repeaters are intended for use primarily by mobiles. Whilst there is no embargo on fixed stations using repeaters, especially those outside the major metropolitan areas, they should be left clear for the mobile operators during those times when traffic is heavy. To prevent monopolisation of repeaters they are fitted with timers which will cut off transmission after about three minutes. This time varies from one repeater to another so keep your overs short. In general, no QSO via a repeater should exceed 10 minutes to allow as many operators as possible to use the device. That means three or four transmissions only!

A pause of several seconds between one station concluding transmission and the next one starting is most important. Firstly, it allows the timer to reset and secondly, it allows for breakers to call. Many breakdowns, accidents, trouble spots, etc are reported via repeaters and delays of even minutes can be vital.

Some repeaters provide a short tone beep to indicate that the timer has reset and that transmission can be recommenced after a short pause.

To access a repeater, set the receiver frequency to the repeater output frequency and set the 600 kHz offset low for repeaters with outputs in the range 146.625 to 147.000 MHz and set the offset high for other repeaters. If the frequency is not in use, press the transmit button and announce your call sign. If all is well you will hear the repeater carrier hold on for a few seconds and then stop. With luck, you will be called by another station. Do not call CQ on a repeater. Just give your call sign and state whether you are listening for a call or testing. Thus "VK3AFW testing", "VK3AFW listening for a call on repeater RWG", "VK3AFW listening" and VK3AFW calling VK1BG mobile" are all acceptable calls via a repeater.

Repeater calls must be brief and concise. A repeater is no place for the long-winded ragchewer. If you wish to check the operation of your equipment always give your call and state that you are testing: do not be a "kerchunka" or anonymous button pusher, you will not make yourself popular if you keep bringing the repeater on and breaking the mute of other sets without identifying.

TUNING THE ANTENNA

The antenna should be mounted temporarily at a height so that the top can be touched. It should be at least one metre above the ground and at least three metres from any metal work or wires. A broomstick and step ladder are very useful for this exercise. Connect a low power transmitter and VHF VSWR meter to the antenna as shown in Figure 2. If a mains operated power supply is used, ensure that it is properly grounded, otherwise you could become a silent key before your first QSO! A number of extension cords have been incorrectly wired and caused fatalities in the past, so be carefull or use a battery powered transceiver.

Set the set on a clear frequency near 147 MHz. Make a brief transmission and measure the VSWR. This will probably exceed 2:1. We aim to reduce this to less than 1.5:1. Using a pair of side-cutters or a hacksaw (depending on whether the whip has a fibreglass core or is a metal rod), cut off three millimetres from the top of the whip. Check the VSWR. It may not have changed much as the whip was probably intended to operates at frequencies below 144 MHz.

Keep chipping away until the VSWR begins to fall below 2:1. Check the VSWR near 146 and 148 MHz. The whip should be tuned until the minimum VSWR occurs at 147 MHz. The VSWR at 146 and 148 MHz will be higher and roughly equal. A VSWR of less than 1.7:1 should be easily attained across the band with less than 1.5:1 at mid-band. A small shift will occur when the antenna is raised to its final position but this should not be of any practical significance.

CONCLUSION

Two metres is a great band and the allocation of NAOCP holders to it will make it better. Next time you hear me on two metres why not give me a call and tell me about your experiences on the band. I am sure you will enjoy two metres!

ar

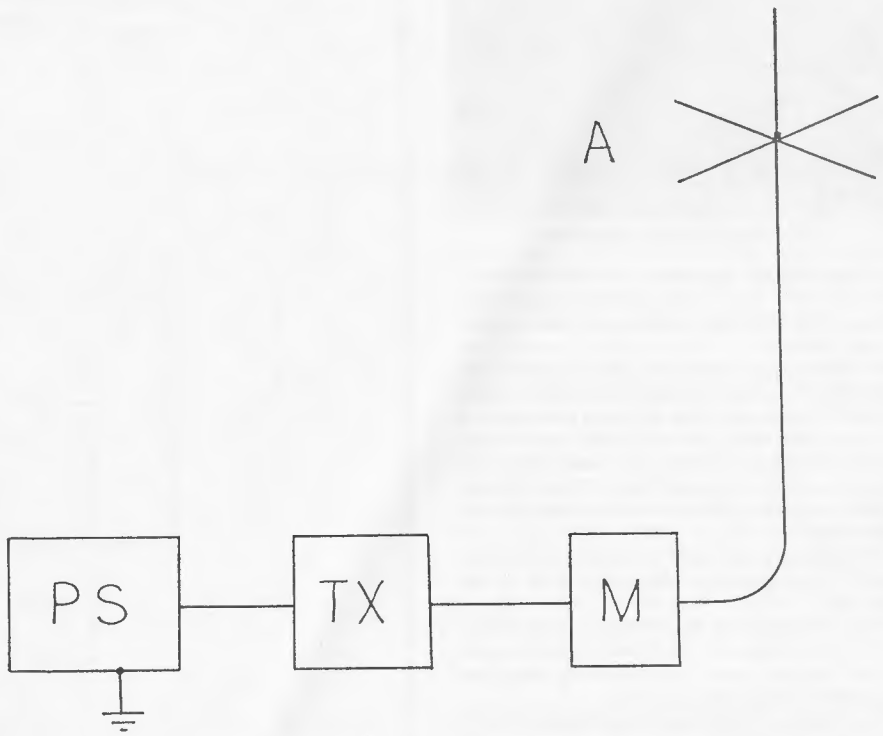
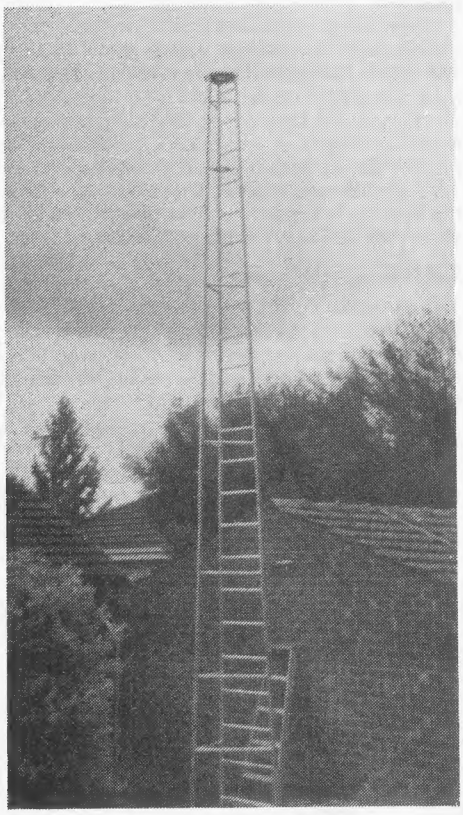


Figure 1: Set-up for tuning a vertical.
PS is a power supply solidly grounded for safety
TX is a low power transceiver to excite the VSWR meter M.
A is the antenna to be tuned.
As purchased the antenna is a little longer than needed and is pruned back to resonance. (See text for further details).

MAST FOR A RESTRICTED AREA

Leo Weller VK3YX
46 Pepperall Avenue, Syndal. Vic. 3150



The mast just after delivery.

The mast to be described in this article is different from most other amateur masts because of the need for accessibility with experimental work.

For many years, some 20 different antennas have been built and evaluated using a tree stem with extensions as a support. Steel pins made it easy to climb and over the years, numerous clamps, brackets, supports, etc, were made into a type of antenna meccano® box. At the top was a small platform sufficient to accommodate test equipment.

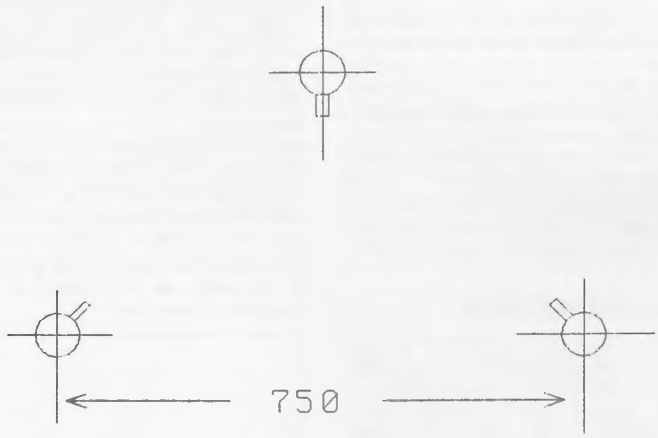
Unfortunately, the wood started rotting just on ground level and the tree stem had to be replaced.

After investigating factory-made towers and visiting local amateurs, it became clear that, with an "off the peg" mast, experimenting would be very difficult and probably cease.

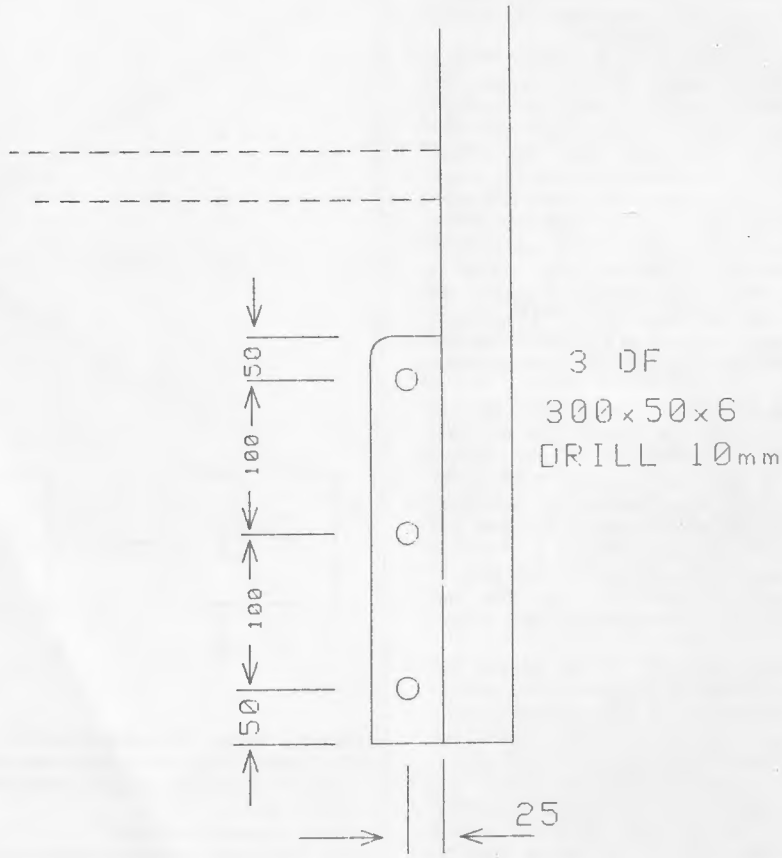
One evening, whilst watching a Navy film, I noticed the radar antenna was supported on a three-legged mast on the foredeck of one of the ships. This mast was shown many times which gave the opportunity to view it from many angles. My mind was made up — this was the mast I wanted!

THE MAST

A visit to the local council revealed a permit was not required from the town-planning authority for towers under eight metres high and less than 60 x 60 centimetres ground area. The confirmed the



Position of Fixtures.



Fixtures to Foundation.

main dimensions of the mast — seven metres high and 75 centimetres triangular base — well within the required regulations.

The mast consists of a ladder, a third leg, a top plate and a second plate. Both plates are drilled to fit a ball bearing. The stay bearings are type KS 0.50 and available from Emtronics. Computations are made for a loading of 40 kilograms and a surface area of 0.75 square-metres. This would be sufficient to accommodate any experimental antenna. With this construction, cross-bracing is not necessary, which give the mast a neat and inconspicuous appearance and keeps wind-loading on the mast itself to a minimum.

The material used is 33.7 OD x 2.6 CHS 25 mm nominal bore for the verticals and 26.9 OD x 2.3 CHS 20 mm nominal bore for the rungs, top plate being 330 mm OD x 10 mm.

FOUNDATIONS

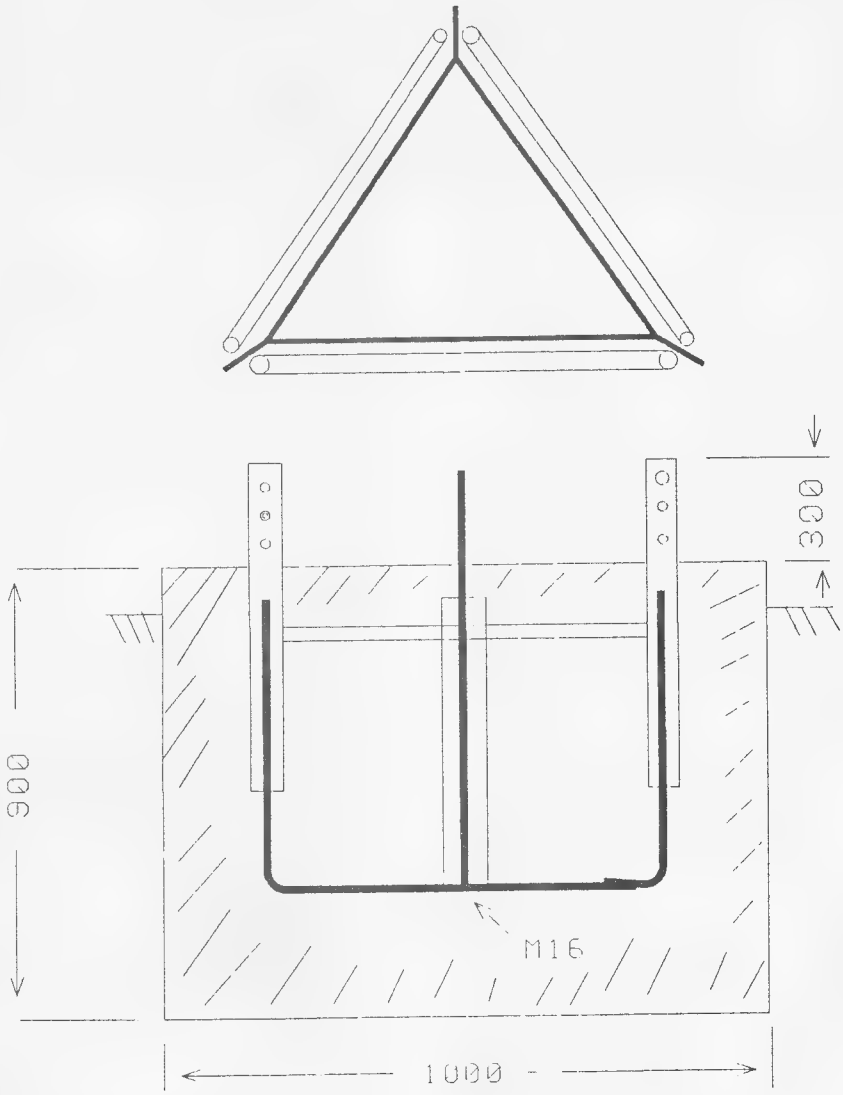
The foundation drawings show the foundation, frame and method of connecting the mast to the foundation.

Most of the work digging the hole in the hard soil for the foundation was made easier by using a post-hole drill. Sixteen holes were drilled to a depth of one metre and the rest of the soil was removed with a shovel. The frame can be positioned horizontally and centrally while the concrete is still wet. The three holes for each leg in the foundation frame are drilled with the mast in an accurate vertical position. The bolts are 10 millimetres in diameter.

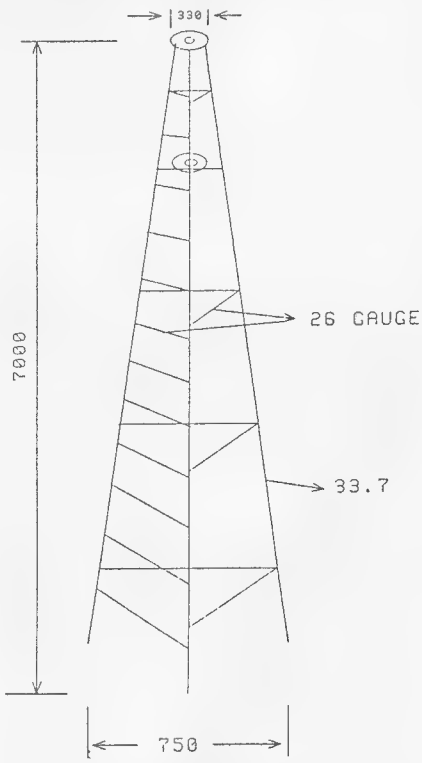
The mast proved to be extremely versatile and fully meets my expectations. Amateurs with a small backyard will find this type of tower, with two or three metres of tubing as an extension, and a small beam, a good solution. A rotator could be mounted halfway up the tower in such a way that the extension tubing can be lowered for antenna maintenance.

The structural computations were made by Gamble and Cosentino Pty Ltd and the construction, delivery and erection by Lukassen Engineering, 14 Florence Street, Burwood. The successful execution of this project depended mainly on their expertise and co-operation for which I am indebted.

ar



Framework and Foundation.



Tower and Dimensions.

EXAMINATION DEVOLVEMENT IN CANADA?

The Canadian Department of Communications appears to be moving towards amateur examination devolvement.

It held a pilot project in Quebec which saw radio amateurs organise and supervise the running of examinations.

The exercise is being evaluated but no official announcement has yet been made.

—From *Westlakes Amateur Radio Club* Newsletter

MEDICAL EMERGENCY IN PAPUA NEW GUINEA

. . . and the doctor is more than a (kidney) stone's throw away!

Ally and Bob Lynch P29RL
C/- PO Box 49, Inmand Valley, SA. 5211

The languid peacefulness of the new day's awakening was now contrasted by a bustle of activity.

THE MORNING OF May 19, 1986, dawned gently in our snug anchorage as one island after another of the rarely visited Arawe group of West New Britain materialised through the gray mist of the dying morning showers and slowly changed to a lush tropical green. The freshness of the morning was matched by the crew of the 36 foot (11 metre) *Maxine.* They had swum and rested the previous afternoon following a magic night crossing of the Vitiaz Strait from Dregerhafen. Throughout that passage, *Maxine* magnificently beating along the fringes of long line squalls of the south-easterly monsoon, had sailed close enough to steal the 15-20 knot winds, yet far enough away to avoid the wrath of the centres and the clutches of the frustrating calms that follow.

The languid peacefulness of the new day's awakening was now contrasted by a bustle of activity aboard *Maxine* heightened no doubt by the six weeks delay in Lae renovating a recalcitrant engine, and by a further day's delay in Dregerhafen locating a doctor about recurring pains in my side and lower back. But these thoughts gave way to the pleasures of my morning coffee and the greater pleasure of watching Ally, my wife of eight months, dip the oar tips in the reflected sunlight as she steadily rowed herself, six-months pregnant, towards the mangroves in search of the oysters that had appeared earlier at low tide.

Paul, a long-standing friend who had joined us in Lae for a two week respite from his coffee shop, was busy about preparing for a trip ashore to a nearby village, the concerns expressed earlier about the coffee shop having obviously vanished with the morning mist.

My euphoria quickly turned to annoyance, however, when I felt a twinge of pain in my lower back. These sporadic pains had started two weeks earlier in Lae, and since they hurt little and not often, I had associated their occurrence with indigestion. The pain had increased somewhat during the sail to Dregerhafen and hence we had spent a day travelling to a doctor in nearby Finschhafen — only to receive a diagnosis of a "pulled muscle". I did obtain medicine for a kidney infection (*my* diagnosis), but was still concerned since I was experiencing no pain during urination.

An acute knife-like pain started in my port kidney an hour later, instantly triggering a memory of 10 years earlier when I suffered a kidney stone. This earlier stone had come without warning or fanfare, and had passed painfully but easily within a few hours. This time, after two ineffectual codeine tablets, I rested in the most comfortable position, on my knees with my head down, and with Paul's commiserations in the background, I awaited Ally's return.

ALLY TAKES UP THE STORY

When I climbed aboard I found Bob crouched on all fours, his face contorted into a terrible grimace. He was clearly in great pain. His first words to me, between gasps and moans, were, "I don't want you to worry, it's only pain." But I could see that "only" was a terrible understatement, and guessed he was down-playing the situation on account of my "delicate" condition.

Bob took a total of six codeine tablets in the space of a few hours, but had no relief. I was about to search for some stronger pain-killers when some villagers came with the news that there was a doctor at the nearby mission, so we sent for him immediately. However, my hopes for an authoritative figure with a little black bag in his hand rapidly faded as the doctor's canoe drew close. The "doctor" proved to be an extremely kind and concerned man, but as he climbed aboard clutching one shipped petrie dish containing his entire medical fit — penicillin, anti-malarials, and bandages — my heart sank. Medical orderlies in countries such as PNG serve a real need in outlying areas, but serious cases are referred to larger centres. Alas, "doctor" Japeth did not know what a kidney was, and there was an embarrassing moment when Bob had to insist quite forcefully that he wanted neither a penicillin shot nor a dose of anti-malarial. Eventually, face was saved and Japeth paddled away with a promise to drop by on the morrow.

Bob was growing more desperate. I found some ampoules of pain-killer and prepared an injection, explaining to him that I had had plenty of experience injecting lambs on the family farm in South Australia. He rolled his eyes and I could see him thinking ". . .like a lamb to the slaughter." Suddenly, as I dabbed his right buttock with alcohol, his pain vanished as suddenly as it had begun. The nightmare, we dared hope, was over.

BOB CONTINUES:

Next morning, before long, the acute pains had returned. By 8 am I was ready to trade my soul for a pain-killing shot, which Ally confidently administered. Slowly I began to feel relief.

An hour later, however, with the sharpness of the pain returning, it became obvious that the stone was not going to pass easily and that we needed outside assistance.

We quickly contacted Tony's Amateur Radio Net, which was in progress, and soon after were relieved to hear a doctor's voice confirming our diagnosis. He gave what advice he could and a further radio schedule was arranged for midday.

The midday sched included the doctor and Don Hopper VK4NN — the amateur radio link with Australian Sea Safety Operations — as well as other interested radio amateurs who stood by to provide relays as needed. After hearing that the pain had not abated since morning, the doctor recommended that we obtain proper medical treatment post-haste. Following the discussion of alternatives, we accepted the doctor's advice, and indeed I welcomed this decision since I could feel myself weakening steadily from the pain and was becoming more disorientated from the effects of the pain-killer.

We then discussed evacuation details — where to go, and how to get there. Kandrian, Kimbe, Rabaul, Lae and Port Moresby were considered but Lae was selected because of its proximity (150 miles to the west) and, since having worked there previously, I was familiar with the hospital and transport facilities. In addition, I had several friends there who could provide reliable assistance.

The more difficult decision was choosing the means for getting to Lae. Villagers said that the nearest airstrip was at Kandrian (30 miles to the east) but there was no road connection from

Rescue helicopter arrives and hovers near the boat, indicating the pilot's plan to lift the patient directly out of the dinghy.

The evacuee's tender is forced violently sideways by the rescue craft's propwash. Despite repeated attempts, this evacuation method proved unsuccessful.

Arawe. They also advised that the local coastal boat servicing this sector was out of service. The possibility of obtaining a local dugout canoe with outboard motor was finally dismissed because of sea conditions and the delays envisaged in organising such a trip.

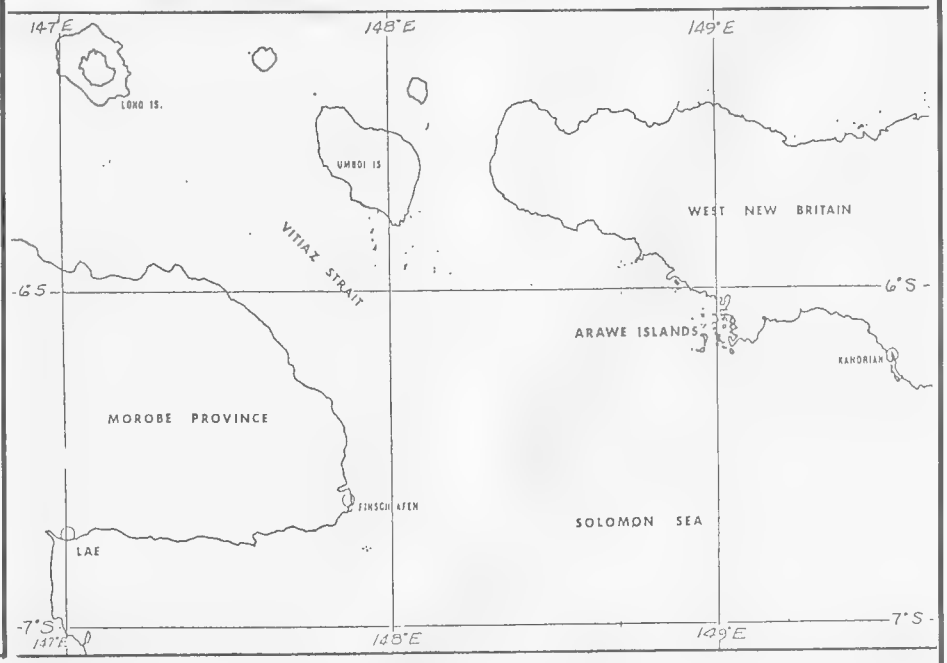
The choice was narrowed to sailing *Maxine* against the south-easterly to Kandrian the following day, or calling for a helicopter to pick me up at Arawe. We considered my weakening condition and the time and energy required to sail to Kandrian. A helicopter would have to do!

All decisions made, organisation of the helicopter rescue operation was left in Don's capable hands. He immediately contacted Sea Safety Operations in Canberra, who in turn contacted their equivalent organisation in Port Moresby, the Search and Rescue Section of the Department of Transport. Don then telephoned my Lae friends informing them of the situation, asking that transport from the airport be organised. Further, that the evacuation operation be monitored from Lae to minimise delays.

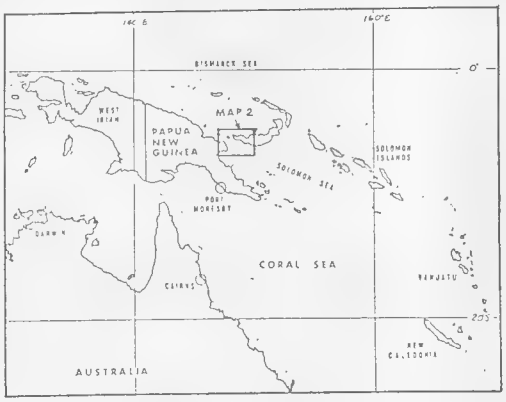
The hours preceding eventual evacuation at 5.30 pm were busy for all concerned. Don contacted the radio branch of the Department of Posts and Telecommunications in Port Moresby, obtaining authorisation for Ally to maintain a daily radio schedule with him at a set time and frequency. Don also maintained contact with my Lae friends to monitor the progress of the operation from there.

Things were hectic aboard *Maxine* during this period. Ally showed her true colours for calmness and organisation by simultaneously monitoring the radio, packing a bag for me, composing a detailed summary for my intended doctor regarding symptoms, medicine administered, etc, while interpreting and recording my sometimes incoherent tirades regarding switching battery banks, checking engine oil, watching for dragging anchors, establishing links with the local villages, etc.

The seemingly endless jobs were finally completed. Captain Ally gave me my last needle as a distant hum announced the helicopter's impending arrival.



Location of the remote Arawe Islands.



General location of Papua New Guinea.

ALLY:

By the time the helicopter appeared in the late afternoon sky, it had become obvious that it was neither an extravagance nor a soft solution as Bob's condition over the last few hours had deteriorated alarmingly. Continual pain, drug side-effects, and probably worry too, had eroded his earlier stoicism and made him increasingly irritable. Surprisingly, he was still thinking rationally and acting sensibly, but I could see that this could not continue for too much longer. Would I be able to cope after that? Fortunately, with the helicopter's arrival this merely became hypothetical.

"Does it have floats?" Bob hollered from down below as the helicopter circled low over the boat. "No," I yelled in dismay, "No floats! What now?"

The helicopter hovered low over the water near us, from which we inferred that the pilot wanted to pluck Bob from the dinghy. I rowed the dinghy, with Bob and his bag, downwind well clear of *Maxine* and waited, wondering if a rope ladder would be lowered, or if the pilot meant us to grab the under-carriage. The helicopter descended slowly above our heads, the wind from the rotor blades beating the water around us to a frenzy. But as it came closer, seemingly inches from our grasp, our cockle shell was blown forcefully sideways out of range. Again and again we tried as my frustration mounted, for I figured that even if we anchored we had a very difficult act ahead of us. The pilot must have had misgivings too for he flew away, returning a few minutes later to signal us to follow him to a beach on the mainland. We hurried back to *Maxine* to mount the outboard and, after much trouble starting it, motored out of the anchorage into the choppy bay, heading for the mainland a mile away. Because of the heavy conditions, the trip was slow, wet and bumpy. Through the spray I looked alternatively at Bob wincing with each bounce, and the rapidly setting sun, and the seemingly ever-distance beach. We finally arrived amid a crowd of wildly excited children who pulled the dinghy through the shallows to the beach. I enthusiastically greeted the pilot Richard and co-pilot Heather, who were unloading a drum of kerosene as a gift for the villagers (a policy Pacific Helicopter has adopted when flying into remote areas).

We helped Bob into the helicopter and Richard started the engine. As the helicopter slowly lifted, Bob's raised hand at the window was like a trigger that released all the feelings I had kept under tight control for the last 36 hours. Enveloped in a circle of bewildered villagers, I wept.

BOB:

We set down on the tarmac in Lae just after dark. As the helicopter landed I could not help but reflect on the unselfish assistance that so many people had given to ensure my earliest possible arrival. The emergency rescue had been carried out in textbook style, swiftly and efficiently. Two weeks and two hospital internments later I returned to Arawe to be reunited with Ally and *Maxine*.

✧ ✧ ✧

Rescue helicopter heads for touchdown on a beach a mile away, where the patient was successfully evacuated.

The following weeks provided many fruitful hours for reviewing the various aspects of the emergency. The major conclusions that we recognise as important are as follows:

1. Report all emergencies in the first instance to Sea Safety Operations, Department of Transport, Canberra, even if you are not sailing in Australian waters, as it is likely that Canberra will be easier to contact (rescue operations in many of the smaller island nations are run on an *ad hoc* basis). It is also likely that the local rescue organisation will respond more positively to an "official" request for assistance from Canberra than to a direct request from an individual. Reporting directly to Canberra may also reduce delays in those cases where the local organisation cannot provide the emergency services required.
2. Make use of emergency facilities available on radio to contact Canberra. At present, Australian legislation covers only those emergencies reported to coastal radio stations on marine band frequencies. These stations relay the emergency details to Canberra and/or contact the appropriate doctor standing-by for such emergencies. Equivalent organisations in PNG and New Zealand operate in a similar manner.

The majority of yachts cruising in the southwest Pacific, however, have opted for amateur radio communication. In these cases, emergency calls, when time permits, should be made to existing amateur radio nets (Tony's Net — 14.313 MHz at 2100 UTC, Seafarers' Net — 14.313 MHz at 0400 UTC, and the Pacific Maritime Mobile Net — 14.313 MHz at 0530 UTC). Operating daily, these nets are controlled by competent and interested individuals who can be relied upon to follow through with each emergency.

Contact with Canberra can be made either through these amateur radio nets or through Sea Safety Operations' amateur radio link VK4NN. In our case, Tony contacted Don VK4NN during his daily sched with Les Nutting ZL1BIN. Don (Australia) and Les (New Zealand) are well-known personalities around the band who are experienced in dealing with yachting emergencies reported on amateur radio.

3. Communication links should be maintained between involved parties throughout an emergency.
4. A state of preparedness should be maintained throughout the emergency. For example, having been informed incorrectly by radio that the rescue helicopter had floats, we had made no plans for the alternative. This caused about a 45 minute delay, which resulted in us landing in Lae just after dark. Fortunately, the pilot was able to obtain special permission to land — this airport being authorised for day operations only.
5. Never depart for isolated cruising grounds if you feel less than 100 percent fit.
6. Each crew member prone to a particular medical problem (be it kidney stones, heart trouble or heat rash) should become *au fait* with its causes, symptoms and treatment.
7. Ensure that the medical kit contains adequate up-to-date medicines that cater for both general treatment and specific crew problems.
8. Crew members should be trained *prior* to a voyage to assume responsibility. Pertinent details for each responsibility; eg battery charging could be clearly recorded to provide a handy reference.

A tele-photo lens belies the long, choppy mile to the rescue beach.

9. Choose the evacuation location with care. Selecting a place where you have friends or contacts has definite advantages, since customs and practices differ from country to country.
10. When an emergency results in a yacht and/or crew being left in a remote area for a period of time local officials/leaders should be contacted. In addition to being a matter of courtesy, these contacts could prove useful if assistance is required.

AFTER—THOUGHT

It is now two months later and *Maxine* is safely anchored in Gizo, Solomon Islands. I am again on my back! This time I have my right leg elevated to expediate the curing of a tropical ulcer that developed soon after my return from hospital.

I feel that this obstinate and potentially serious sore is, at least, partially due to our recent hectic sailing schedule. This leads to one final observation — following a medical emergency, allow sufficient time for your body to fully recover from the illness and medication. I dare say there are enough non-energetic tasks on the jobs-to-complete list to occupy the mind (and improve the boat) while the body mends.

FOOTNOTE

Bob a Civil Engineer, is an Australian citizen from the USA. He holds an amateur licence, P29RL, in Papua New Guinea, where he worked for over eight years prior to beginning his epic yatching voyage.
Ally is from South Australia. She lived and worked in Japan for several years as a Japanese translator.
Andrew Lee, the *new first mate,* was 16 months old in February.
In February 1988, the crew were still cruising on *Maxine* in the Philippines.
Sincere thanks is extended to all the amateurs who assisted in Bob's successful evacuation to Lae Hospital.

LICENCE RESTRUCTURE

The Canadian Department of Communications has proposed restructuring of the Amateur Radio Service and supports a new structure based on four classes of certificates including a no-code VHF/UHF entry level.

The proposed entry level requirements will be the passing of a 100 question examination based on 40 hours study of basic electronics, amateur radio systems, antennas and propagation, interference and suppression, regulations and operating procedures.

Privileges for this class of certificate would be all modes on all bands above 30 MHz, maximum 250 watts input, and be able to use only "commercial" transmitting equipment.

The next grade would have the same examination paper syllabus as the entry level class, plus five words-per-minute code examination, and gained additional privileges of all modes 3.5 to 4.0 MHz, maximum 250 watts input, and be confined to commercial transmitting equipment.

Passing the 12 words-per-minute code examination would entitle holders of the entry level certificate to all modes and all amateur bands below 30 MHz, using commercial transmitting equipment.

Holders of the entry class certificate could, if they pass a 50 question advanced technical examination, and 12 words-per-minute code examination, be given full operating privileges, including maximum transmitting power and the right to home-build transmitting equipment.

The Canadian Radio Relay League, who made a submission to DOC on its thoughts about restructure nearly two years ago, is now negotiating with the Department on its proposals.

A VHF MODEM FOR RTTY, AMTOR AND PACKET

A simple VHF RTTY/AMTOR modem incorporating AX.25 Packet Radio!

Ron Mills VK5XW
13 Taylor Terrace, Rosslyn Park, SA. 5072

Whilst constructing a simple VHF modem for RTTY and AMTOR it seemed like a good idea to try and incorporate AX.25 Packet into the unit as most of the major components were common to this type of PLL modem as used by the three modes. As it happened, apart from the relay which was at hand, the extra cost was only around $15. It was constructed on Veroboard (Tandy 276-162).

All components, including the relay, fitted onto this board, however, for those unfamiliar with Veroboard construction, it may be prudent to use a larger board.

Component placement was not critical but it is better to give some thought to the layout of the components as that they are close to the relevant chip pins to keep the overall layout neat and easy to service. Use small 10-turn potentiometers for RV3 to RV8 and styroseal timing capacitors. It is relatively easy for home-brewers to achieve good results with Veroboard. As this is only a suggested solution for combining the three modes, no PC board or layout will be produced.

The main alterations needed to change from VHF RTTY/AMTOR to VHF Packet working were:

1. Change the Demodulator Baud rate from 45-110 (RTTY/AMTOR) to 1200 (Packet) and the centre lock frequency of the XR2211 from 2210 Hz to 1700 Hz.
2. Change the AFSK modulator frequencies from 2125/2295 Hz to 1200/2200 Hz and add the timing CCT. (This was borrowed from the Australian Amateur Packet Radio Association's (AAPRA) Packet Radio Modem circuit — Software for the Commodore C64 computer with interface instructions can be obtained from AAPRA).

Using a 12 volt, four-pole change-over relay made the above Baud rate and frequency changes possible and hence the project viable.

Having never been very impressed with the XR2211 as a demodulator (especially on HF), my introduction to RTTY many years ago was via this chip with an XR2206 as the AFSK generator. I learnt the hard way that even though the XR2211 is designed to handle an audio input level of between 2 mV and 3 volts RMS. it was not very difficult to accidentally exceed the 3 volt level from the audio available across the loudspeaker. The inbuilt preamplifier soon became very deaf! By limiting the input to XR2211 to around 0.7 volts by clamping its input to ground with back to back diodes such as IN914s (ensure that there is a capacitor between the clamping point and pin two of the XR2211), the inbuilt preamplifier was protected.

It was also discovered that better results could be obtained by feeding the input to the XR2211 from the audio source (usually from across the transceiver's speaker) via an 8/1000 ohm matching transformer (Tandy 273-1380). As well as giving a better match, it also prevented any distortion created by the clamping diodes clipping any excessive voltage due to audio overload from getting back into the speaker output. No problems have been encountered even using germanium diodes (0.3 volt) affecting the operation of the XR2211 if overloaded. A relatively cheap and reliable modem can be constructed for use on the VHF band using XR chips, so long as the above points are kept in mind. (The RTTY/AMTOR section actually works quite well on HF as long as the signal is not down in the noise).

Most of the circuitry is straight from the specification sheets for the XR chips with minor compromises to satisfy the large range of Baud rates. A LED was added to indicate just when the XR2211 was in lock. Although not really necessary for VHF apart from showing that you are receiving a signal and are on frequency, on HF RTTY/AMTOR it makes tuning much easier.

RLY1 changes from RTTY/AMTOR to AX.25 Packet with RL3 14/9/16 changing the Baud rates. RL1 5/12/7 and RL2 11/6/13 the AFSK tones and RL4 8/15/10 the PTT circuit change. The 555 receives plus five volts from the cassette port of the C64 to prevent keying of the transceiver should the computer be switched off first. Provision was made for the polarity of the TTL input and output to be reversed mainly for RTTY/AMTOR use. As this project was initially for use as a RTTY/AMTOR modem, the five volt TTL levels were obtained by using voltage divider networks using 18K and 10K resistors from the 12 volt rail. After the Packet facility was added and five volts became available, the original values were not changed.

As the modem was made for use with the Commodore C64 computer, two separate DIN

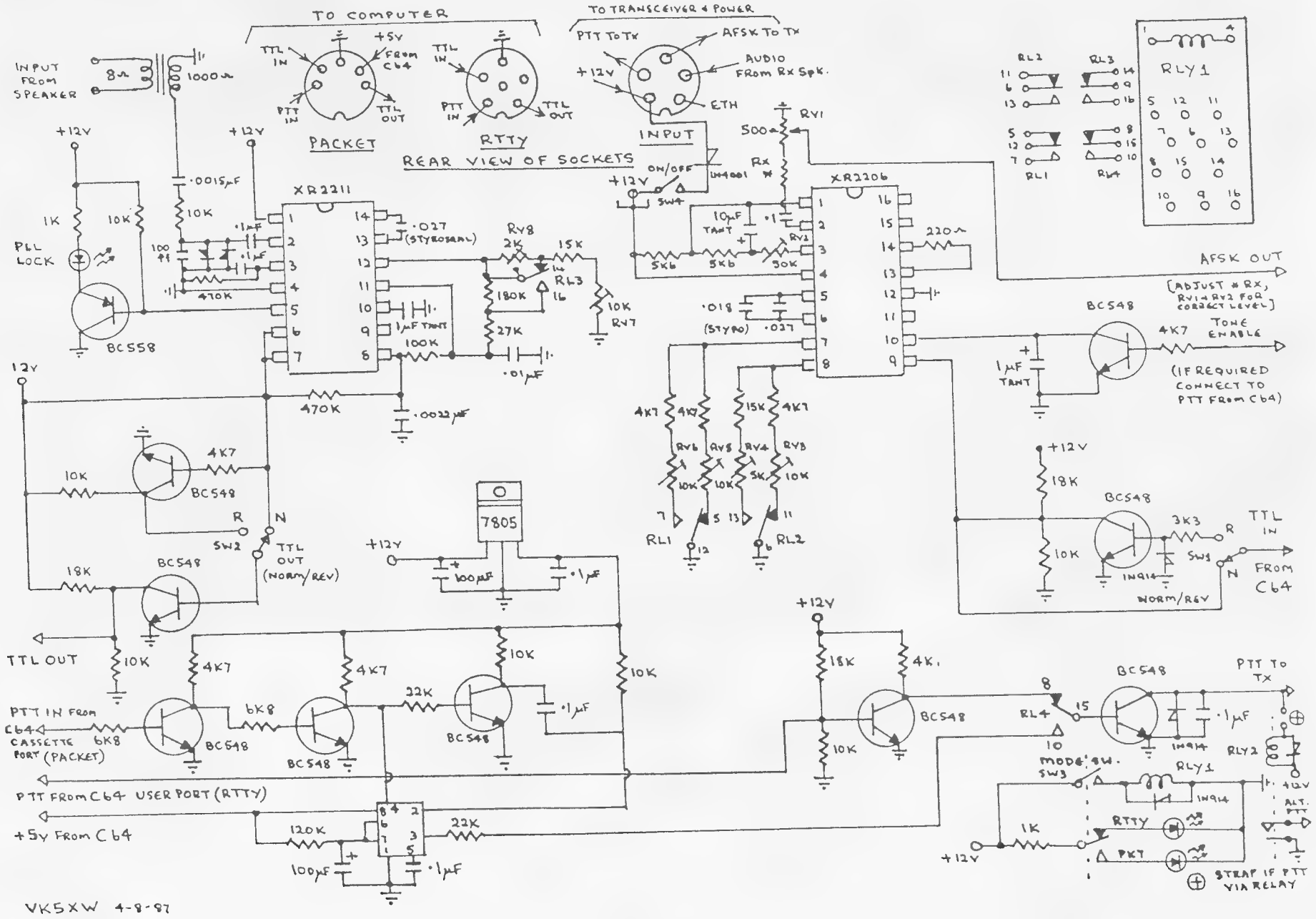


Figure 1 — RTTY/AMTOR/PACKET Modem.

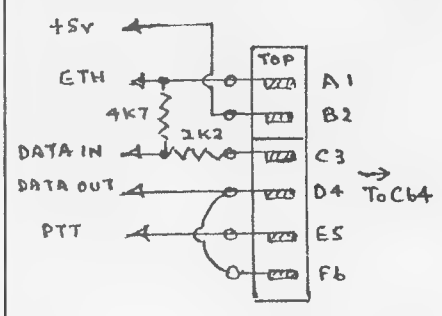


Figure 2 — Wiring to C64 Cassette Port for Digi Com 64.

sockets were fitted to give both RTTY/AMTOR and Packet access to the computer. Because different input points were necessary, eg the cassette port is used for Packet using the German Digi-Com 64 software, which seems to be the most popular program in South Australia, and the user port is used for RTTY/AMTOR, the DIN sockets were made different so that the interface cables could not be mixed up. (The software from AAPRA uses the Commodore User Port for Packet — wiring details are supplied with their kits). C64 software programs for RTTY/AMTOR/Packet are readily available by asking around the groups using these modes.

The frequencies were set using an Audio Frequency Generator/Counter. Set RV3 for 2125 Hz (0 volts (GND) on pin 9) of the XR2206 and RV5 for 2295 Hz (5V on pin 9). Operate mode switch SW3, adjust RV4 for 1200 Hz (0V on pin 9) and RV6 for 2200 Hz (5V on pin 9). Set the centre lock frequency of the XR2211 by connecting the frequency counter to pin 3 of the XR2211, strap together pins 2 and 10, apply power then adjust RV7 for 2210 Hz, operate the mode switch SW3 and adjust RV8 for 1700 Hz. Turn off the power and remove the short from pins 2 and 10 of the XR2211. (Most procedures recommend the removal of pin 3 of the XR2211 chip from the socket and measure the frequency on the now floating pin 3. This is risky in that the pin may break off in the process. I have found that leaving pin 3 plugged into the socket is almost as good. Sometimes it has only been necessary to just tweak RV7 (only once) to get proper lock on AMTOR.).

Provision has been made for setting of the AFSK level. Most two metre transceivers seem to require an audio input of around 7 to 10 mV for good sounding Packet tones. The values of RV2 and RX were adjusted so that there was about 10 mV across the 500 ohm trimpot, RV1, and then RV1 was adjusted on air until favourable reports were received on the quality of the tones.

Shielded cable was used between the modem, the computer and the transceiver. Regulated 12 volts DC came from the station power supply. The modem fits into a metal case 100 x 60 x 145 mm (WHD). This can be bought at most suppliers or it may be home-brewed. The front panel has two switches — Power On/Off, and Mode. Three LEDs, one (green) for PLL Lock and two (red) to indicate the mode in use, ie RTTY/AMTOR or Packet. They also serve as power on indicators. The rear panel has three sockets. Two are DIN for connection to the computer and a five pin (microphone connector type) for power (12 volts DC and ETH) plus transceiver connections (audio from the speaker, PTT and AFSK).

As only the computer software and interface connections would be different, this modem should be adaptable to any computer.

A much more detailed description of the operation and line up procedure of the Packet section can be found in an excellent article by VK2AAK in the July. August 1987 issues of *Australian Electronics Monthly* or from the AAPRA should you purchase their software package.

AUDIO FREQUENCY GENERATOR COUNTER

Not a constructional article but a working circuit incorporating ideas!

Ron Mills VK5XW
13 Taylor Terrace, Rosslyn Park, SA. 5072

For a long time I have been an avid home-brewer of RTTY/AMTOR, and more recently, Packet modems. It did not take long before I realised that I needed a reliable means of checking the frequencies. Over the years I have built and modified many audio generators for this purpose. Some of the ideas are original and others have been borrowed from the many articles published on this subject.

This is not meant to be a constructional article on building such a unit, but the submission of a working circuit incorporating ideas that may be of use to other constructors who would like to experiment. Of course, anyone reasonably skilled in building such projects could replicate this design and expect it to work.

The frequency covered is from 10 Hz to 200 kHz in three ranges, with variable output of sine, triangular or square waves plus a fixed five volt p/p square wave output for TTL. The function generator's frequency is monitored by a crystal locked frequency counter which can also be used as a counter for external signals. This allows test frequencies to, and output frequencies from modems to be easily set. The most difficult part of the project is to get a fine enough control over the setting of the frequencies generated. The circuit is better than most of this standard, especially if a 20 kohm linear Bournes type 10 turn potentiometer is used for the fine frequency control (if you also use one of these for the coarse frequency control, so much the better). I only use ordinary 20k linear potentiometers with quite good results, although they are a little "fiddly" once set the frequency remains firm. The HZ and kHz LED indicators are auto-ranging. Although shown as separate LEDs in the schematic diagram (see Figure 1), they actually are wired to the decimal points of the Digital Display LEDs.

There are undoubtedly better and more sophisticated ways of tackling some of the circuit design, but this relatively simple one may be of interest to others. The frequency counter was built on one board and the function generator on another. The boards are "piggy-backed" to fit into a reasonably small case with the power supply.

Many articles have been published on setting up the XR2206 as a Function Generator so this is not covered in this article.

See page 16 for Figure 1.

DEADLINE FOR SEPTEMBER IS JULY 18, 1988

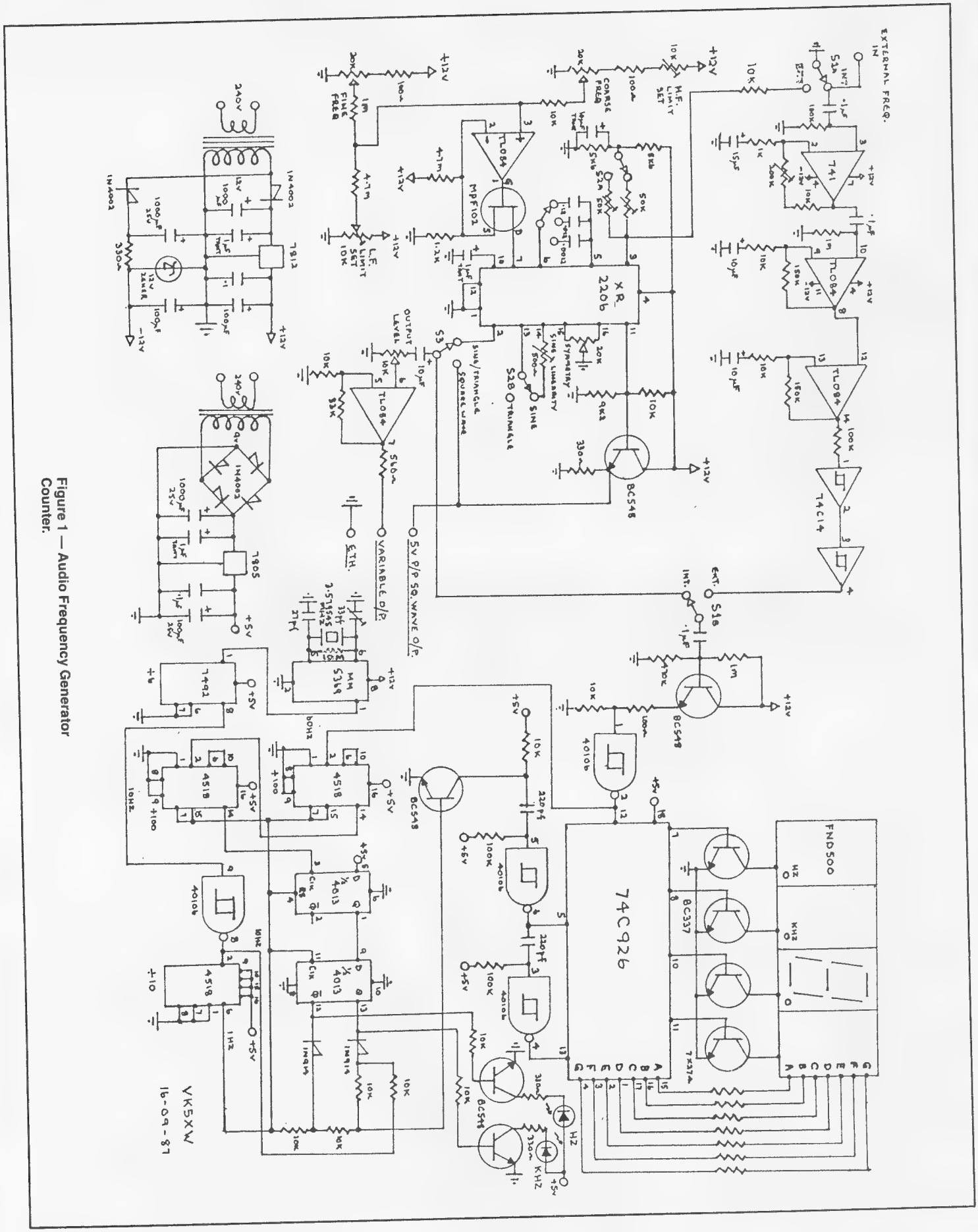


Figure 1 — Audio Frequency Generator Counter.

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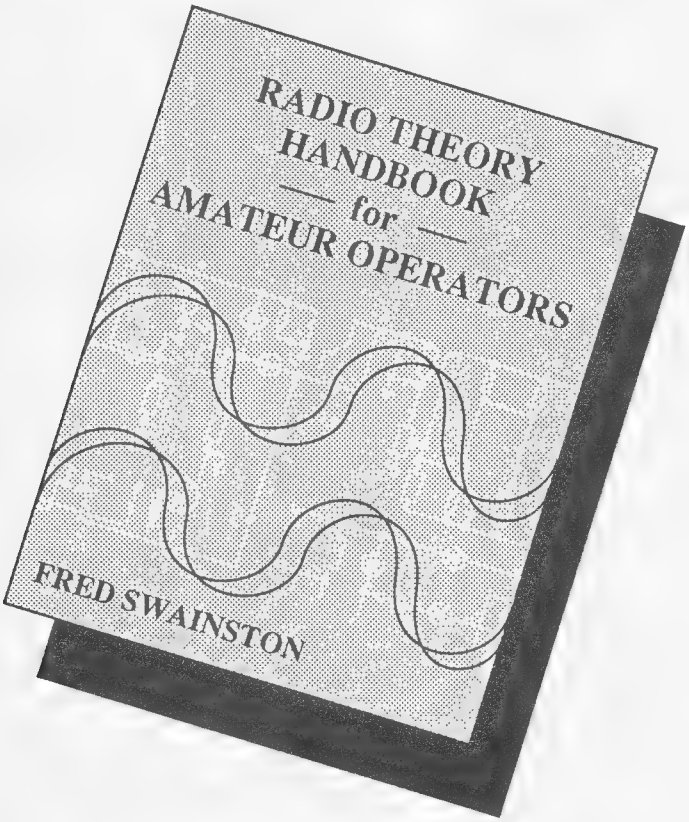

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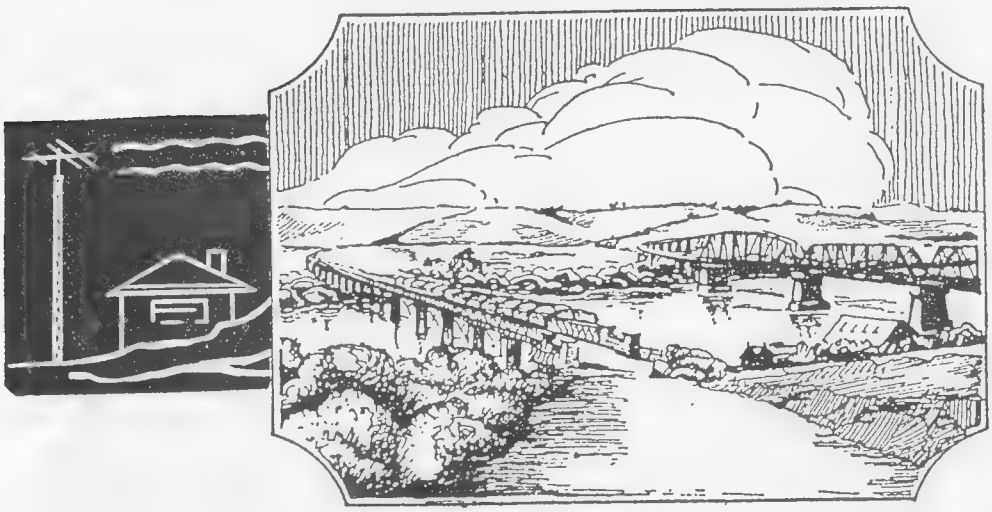
THE MURRAY BRIDGE STORY

A History of Amateur Radio in one South Australian Town

Lloyd Butler VK5BR
18 Ottawa Avenue, Panorama, SA. 5041
(With support from others — see text)



Every town has its own amateur radio story — Murray Bridge is no exception!

THIS ARTICLE IS a historical review of amateur radio at Murray Bridge, commencing in the early experimental days of 1924 and passing through an era when radio amateurs built their own equipment. The article continues with some interesting details on the activities of the amateurs and the equipment they used.

INTRODUCTION

Every town has its own amateur radio story, some of it early history which has passed on with the silent keys of those who created it. This is the story of one particular town, Murray Bridge, told by some amateurs who have been active there.

We begin with an early experimenter, Frank Miller, long since a Silent Key, and progressively discuss the various radio amateur enthusiasts who followed on to build their own equipment and generate radio signals on the air. We finally review amateur radio in Murray Bridge as it has been in recent years.

We discuss modes of transmission and the type of equipment used in the pre-war and early post-war era and make particular reference to the problems we had in coping with the DC mains which Murray Bridge originally had.

Much of the story has been assembled from information supplied by some of its early participants, namely, Elizabeth Wallace, formerly Betty Geisel VK5YL, Bob Grundy VK5BG, Jack Trevor, formerly VK5AM and now VK2UP, Bill Rice, formerly VK5BP and now VK3ABP, and Lloyd Butler VK5BR, the writer. Information contained in reference 1 and 2 has also been utilised. More recent information, particularly that concerning the Lower Murray Amateur Radio Club, has been supplied by Colin Schick VK5JP.

THE EARLY YEARS

The pioneer amateur radio experimenter in Murray Bridge was Frank Miller, who had an early association with communications as a signaller in World War 1. He is accredited with having assisted in developing the teletype machine whilst working in the trenches with the Signal Corps[1].

Frank set up as an experimental broadcaster in Murray Bridge in 1924 using a grid modulated master oscillator with an input power of 4.4 watts. His call sign was 5BF, which eventually became VK5BF in later years with the development of amateur radio communications. (Considerable detail of Frank's early experimental broadcasting can be found in reference 1). Frank spent the rest of his life as an active radio amateur in addition to his many other activities associated with radio in Murray Bridge.

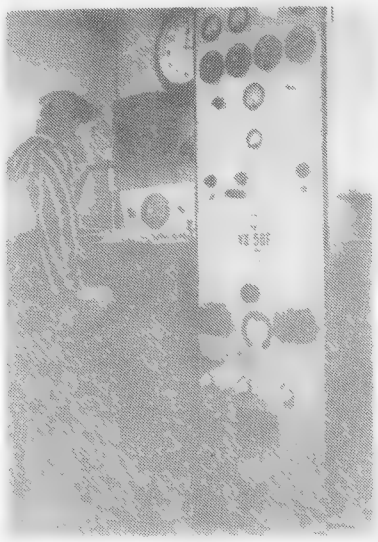


Figure 1: Frank Miller and his amateur radio equipment.

For some years Frank managed a radio and electrical business in the town, servicing radio receivers and actually building receivers for sale. In 1934, in conjunction with a business partner, Frank set up Broadcasting Station 5MU with a 50 watt transmitter which he had built himself, and with local help (much of it voluntary) he erected masts and an aerial system for the station.

In 1925, a Murray Bridge branch of the Railways Radio Club was formed and Frank had a close association with this club as joint secretary. The club operated from railway offices across the line from the Murray Bridge Railway Station and Frank carried out transmissions from that location using one of his old transmitters. He was also a member of the South Australian branch of the Wireless Institute as early as 1921, only two years after it was formed[2].

Over the years, Frank built numerous units of experimental radio equipment. Apart from his knowledge of radio, he was skilled in fitting and turning and meticulously applied these skills to the construction of his radio equipment.

A QSO recorded in 1937 shows that, at that time, Frank used a two stage transmitter consisting of a 6P6 valve oscillator driving a pair of 807 valves in parallel, with an input power of 25 watts. This had superseded an earlier transmitter using a Meissner master oscillator driving a power amplifier (details unknown). His receiver was an eight-valve superheterodyne, and on 80 metres he used a 134 feet single wire matched impedance antenna. A photograph of Frank, with his station around the 1940s, is shown in Figure 1. Frank also later obtained a National HRO receiver, a desk mounted version of the one shown in Figure 2. Early equipment was powered from the DC mains supply to be discussed later.

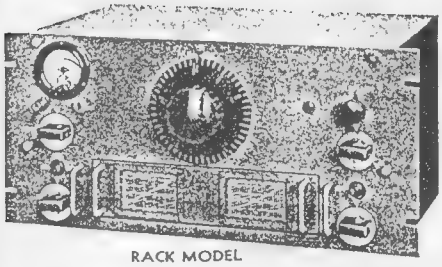


Figure 2: The National HRO Receiver.

Rotatable high gain beams, seen everywhere today where there are radio amateur stations, were not so common in those early years. Frank built a 20 metre rotatable Yagi which was mounted on a timber mast. To change direction, the whole mast section was rotated by a mechanism fitted at ground level. The mechanism was made up from an old milk separator gearbox, working in reverse,driven by a quarter horse power DC motor.

Frank's last transmitting system, then AC mains powered, included a rack containing 1000 volt power supplies using 866A rectifiers, a modulator using a pair of 838 valves and an RF unit on 20 metres using a pair of 834 valves as a final stage. The rack was probably redesigned from the one shown in Figure 1. An auxiliary rack contained RF units on 40 and 80 metres and one unfinished unit, probably meant for 10 metres. The auxiliary RF units worked in conjunction with the main power-modulator rack.

After Frank became a Silent Key, his transmitter and other equipment was purchased by Dave Goode, a one time resident of Murray Bridge and district. Dave also took up the call sign VK5BF and made many contacts from the town of Yankalilla, using Frank's old transmitter.

VK5YL

An early Murray Bridge amateur radio operator was Betty Geisel who, in 1936, was the first YL (young lady) in South Australia to obtain an amateur radio licence. Appropriately, her call sign was VK5YL. Betty also obtained her commercial operator's certificate and she has the distinction of having her certificates on display in the comprehensive radio section of the Adelaide Telecommunications Museum[3].

Betty operated in the CW mode mainly on the 40 and 80 metre bands, with an occasional contact on 20 metres. Betty built her own transmitter and receiver from limited resources. A QSL card, confirming a QSO in May 1937, shows that her transmitter then utilised a valve type 42 electron coupled oscillator, running an input power of 10 watts. Further cards show, that in 1938, her transmitter had been changed to a 38 Tri-tet crystal oscillator driving a pair of 42 final amplifier valves with an input power of 25 watts (refer to Figure 3). Her receiver was a two valve regenerative set, using a type 30 valve RF stage driving a type 19 valve audio stage. (Her final superheterodyne was constructed later after she moved to Adelaide). The receiver and transmitter were initially powered from batteries although later the town DC mains were utilised.

Betty assembled her own high tension batteries to operate her equipment. The series cells, which made up the battery, were constructed by extracting the positive carbon rod and depolariser package from old spent dry cells and fitting them in *Marmite*® jars. The negative electrode was made from a rectangle of zinc amalgamated with mercury. The electrodes were immersed in an electrolyte of sal-ammoniac or common salt solution. The sal-ammoniac was more satisfactory but Betty cannot remember which one she used.

Her aerial, a half wave dipole on 40 metres, was supported by a 40 foot oregon pole which Frank Miller and Bob Grundy helped her erect.

Betty operated at Murray Bridge until 1939 when she left to work at National Radio in Adelaide. Betty, now better known as Mrs Elizabeth Wallace and lives in the Adelaide suburb of Tranmere, went on to become a High School teacher, a profession from which she has now retired.

VK5BG

Another early Murray Bridge amateur radio operator and experimenter was Bob Grundy, who obtained his licence in late 1937 and began operation with the call sign VK5BG.

One of Bob's early activities was carrying out the job of radio operator at Oodnadatta for a 1938 expedition to the Simpson Desert. The expedition was organised as an attempt to find some trace of the Leichhardt party. (Following many previous epic journeys into the outback, early explorer Doctor Ludwig Leichhardt and his party disappeared in 1848 during an attempt to cross the Australian continent, starting from the Darling Downs and intending to finish in Perth).

During Bob's years at Murray Bridge he built a number of different versions of amateur radio equipment. His first transmitter (on CW) used a 42 crystal oscillator driving a 42 power amplifier. A 6A6 modulator was later added to the original unit for phone operation. A further transmitter used an 809 power amplifier modulated by a pair of 6A6 valves and just prior to World War II, the 809 was replaced by push pull 45 valves. A 1938 QSL card reveals that, at that time, his transmitter was a three stage crystal controlled unit using a 42, a 6V6GT and parallel 6P6 valves as a final amplifier with an input power of 20 watts. The final amplifier was Heising modulated by a pair of 42 valves in class AB push pull. At that stage, his receiver was a home-built superheterodyne. An RF power amplifier, built by Bob, utilising a pair of 45 valves, is shown in Figure 4.

Figure 4: An RF Power Amplifier built by Bob Grundy VK5BG, using 45 type valves.

Bob's post war transmitter, used in 1946, consisted of a 6V6 crystal oscillator, 6V6 driver and push pull 807 final amplifier modulated by a pair of 6A6 modulators operating in class B. A photograph of his radio shack, taken in 1947, is shown in Figure 5. The receiver in the photograph is not too clear, but it can be seen, that at that time, he had upgraded his receiver to a National HRO, his first item of any commercially built transmitting or receiving equipment. After the war, for a short period, the first and only HF band released was 10 metres and Bob had a six element Sterba curtain antenna operating on that band. The schematic diagram of the Sterba array, a broadside antenna which consists of both collinear and parallel elements, is shown in Figure 6.

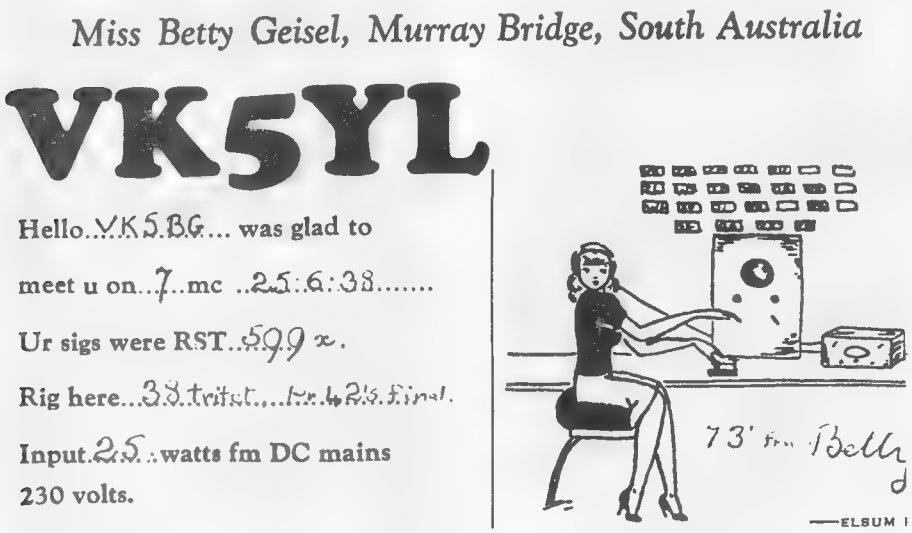


Figure 3: QSL card from Betty VK5YL — the first YL operator in South Australia.

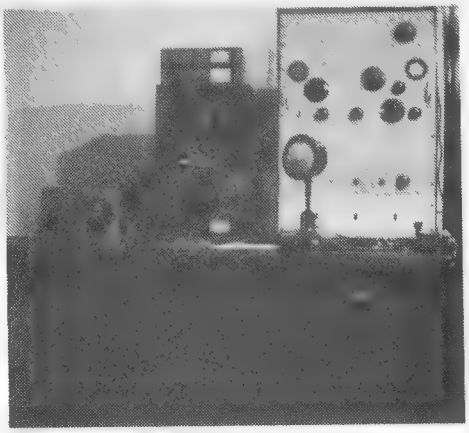


Figure 5: The equipment used by Bob VK5BG in 1947.

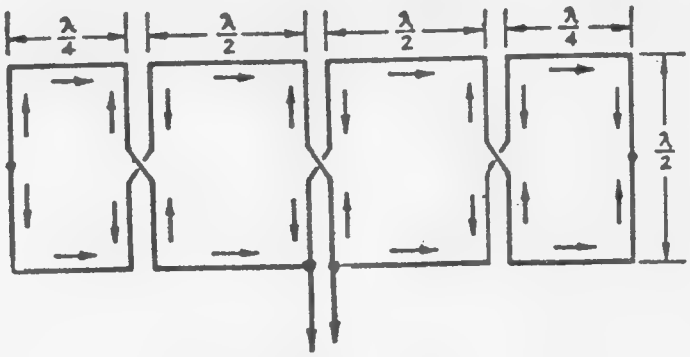


Figure 6: A Schematic Diagram of a six element Sterba Curtain Antenna.

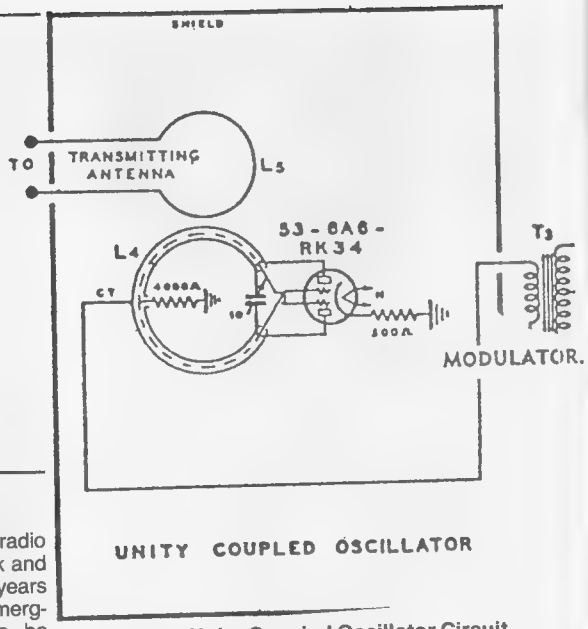


Figure 8: Unity Coupled Oscillator Circuit used on five metres.

Bob operated his station at Murray Bridge until 1952 when he moved to Crystal Brook to take up duties at Broadcast Station 5PI. Since then, Bob has spent many years as an active radio amateur at the Brook and is still there in his retirement. With 50 years as an active radio amateur, Bob is one of our real veterans in the VK5 region.

One early activity carried out by Frank and Bob was field operation on the old five metre band. Figure 7 is a photograph of Frank and a very young Bob operating fixed portable in the field. In this installation, the antenna used was a vertical collinear array supported by guy ropes. For five metre operation, their transmitters utilised a unity coupled oscillator, with 6A6 valves, in a circuit similar to that shown in Figure 8. The receivers were made up from the resistance coupled five metre superheterodyne circuit published in the early *Jones Handbook* (see Figure 9). Betty also recalls enjoying herself on a VHF field day at Palmer Hill and was so impressed that she went to work and built herself a VHF transmitter. She did not succeed in getting it to work very well but the attempt was made.

THE EARLY POST-WAR YEARS

At the outbreak of World War II, all amateur radio stations were closed down. However, Frank and Bob made use of their skills during the war years by setting up, for the district council, an emergency radio network, one of the first to be introduced for Emergency Fire Service (EFS) work. Licences were gradually restored early in 1946 when Frank and Bob renewed their amateur station activities. They were soon to be joined by other enthusiasts who had roots in Murray Bridge.

VK5BR

Lloyd Butler has qualified for a licence during the war years, in 1941 and first transmitted as a radio amateur with the call sign VK5BR in January 1946. Lloyd actually commenced operation in the Adelaide suburb of Blair Athol, but commuted at weekends to his home at David Terrace in Murray Bridge, where he operated fixed portable, using a low power 10 watt rig with a 25L6 as final RF amplifier.

Lloyd initially operated at Blair Athol with 35 watts of input power but soon upgraded to 100 watts after passing the first class amateur certificate, which was introduced for a short time permitting operation on the higher power. (The full 100 watts was eventually granted to all amateurs in September 1947). The transmitter used had an output stage of push pull 807 valves, running 750 volts on their plates and modulated by another pair of 807s, with 600 volts

Figure 7: Frank Miller VK5BF and a young Bob Grundy VK5BG, operating in the field on five metres.

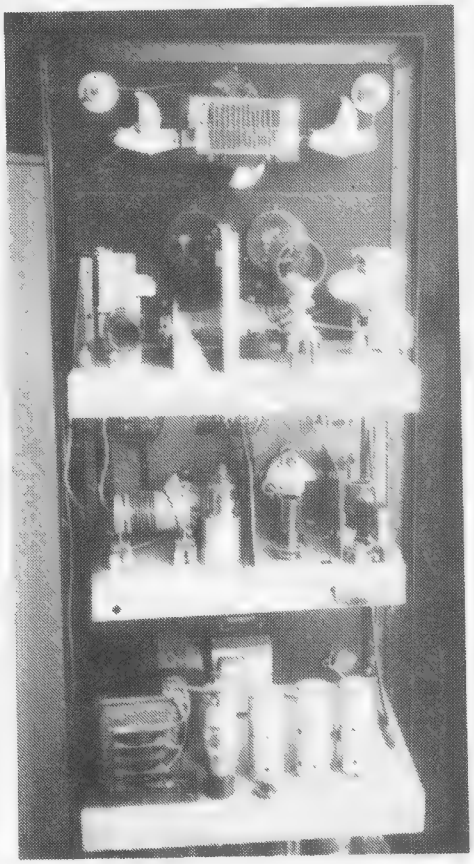
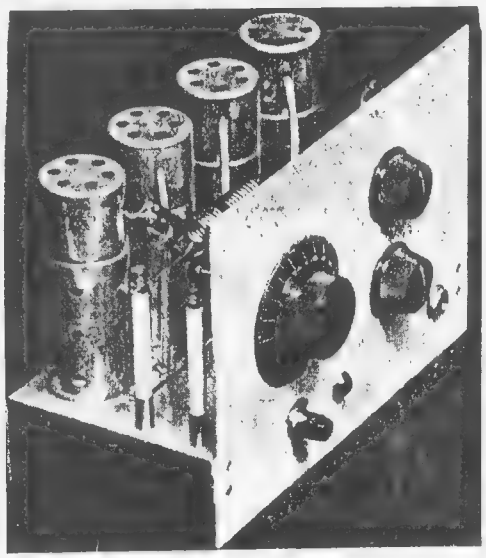


Figure 10: Modulator and RF units at VK5BR.



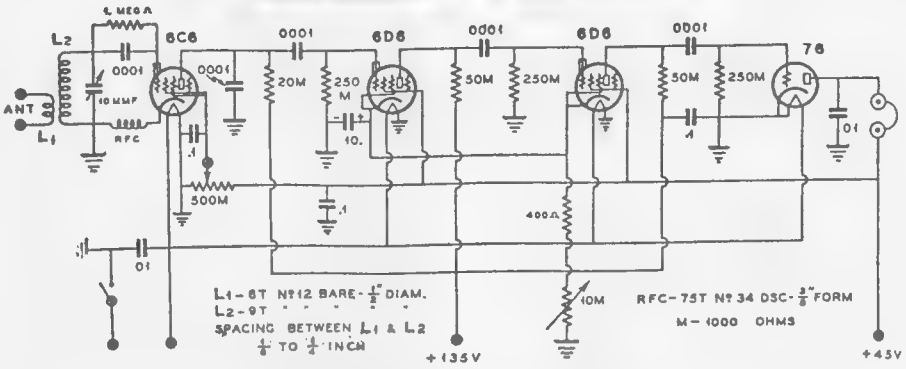


Figure 9: *Jones* Resistance-Coupled five metre Superheterodyne.

on their plates. The RF output stage was driven by a three stage exciter consisting of a 6F6 crystal oscillator and 6V6 — 807 buffer/multiplier stages. The exciter was, in fact, previously used as the 35 watt transmitter which was then modulated by the same modulator panel but with 6F6 type valves.

A photograph of the top section of Lloyd's rack showing the aerial tuner, RF stages and modulator is shown in Figure 10. All coils are on plug-in bases to allow change of frequency. Link coupling between RF power amplifier and aerial tuner is not shown in the photograph. The complete transmitter rack is shown in Figure 11. Power supplies are fitted at the base of the rack, the heavy transformers providing mechanical stability to the structure. Two separate supplies, each using a pair of 5Z3 rectifiers, provide the 600 and 750 high tension voltages. Additional separate lower voltage supplies are also fitted for powering the RF exciter, modulator and grid bias. Lloyd's receiver (Figure 12) was a 10 valve superheterodyne, home-built as was the transmitter.

Boarding-out and amateur radio did not quite go together and, in 1948, Lloyd moved all his equipment back to Murray Bridge, operating there with reduced power because of the DC power mains. (The problems of the DC power

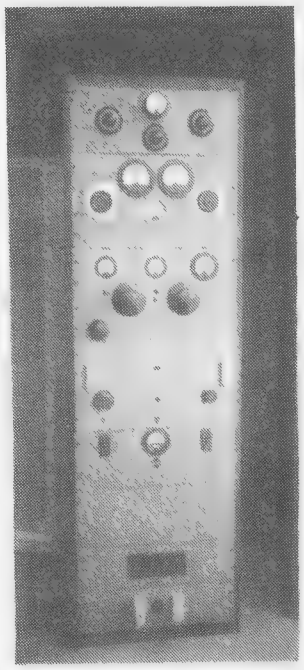


Figure 11: The original transmitter of Lloyd Butler VK5BR.

Figure 12: Lloyd's receiver.

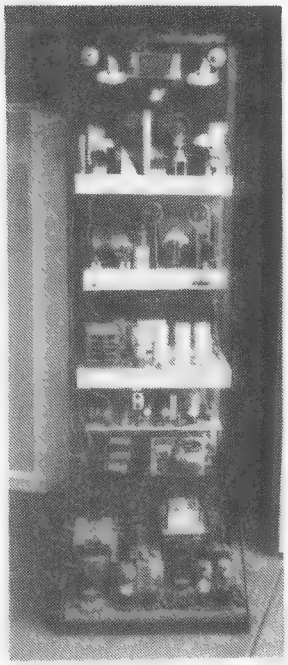
will be discussed later). Lloyd operated intermittently from Murray Bridge until 1958. He then became an inactive licence holder until 1982 when he renewed operations from the Adelaide suburb of Panorama. Lloyd, close to retirement from the Defence Department, is still an active amateur and experimenter.

VK5AM

Jack Trevor was discharged from the Navy following war service, to take up residence in his home town of Murray Bridge. Jack was given the call sign VK5AM (Figure 13) after qualifying for a licence in late 1946.

Jack's first transmitter was built from a *China Mk 1* radio set which he brought home from the Persian Gulf. The transmitter consisted of a 6V6 crystal oscillator, 807 driver and push pull 807 final amplifier running 20 watts input from the 230 volt DC mains. Valve heaters were series operated from the mains via a radiator element. His first receiver was a Navy type B28. Antennas used were two half waves in phase on 40 metres and a Lazy H on 10 metres.

We raised the question of what was a *China Mk 1* set and Jack informed us that this was specially designed for use on small craft operating at the British Navy *China Station.* Up to about 1938, this station was based in Shanghai and the small craft were possibly gun boats operating in the Yangtze Kiang River.



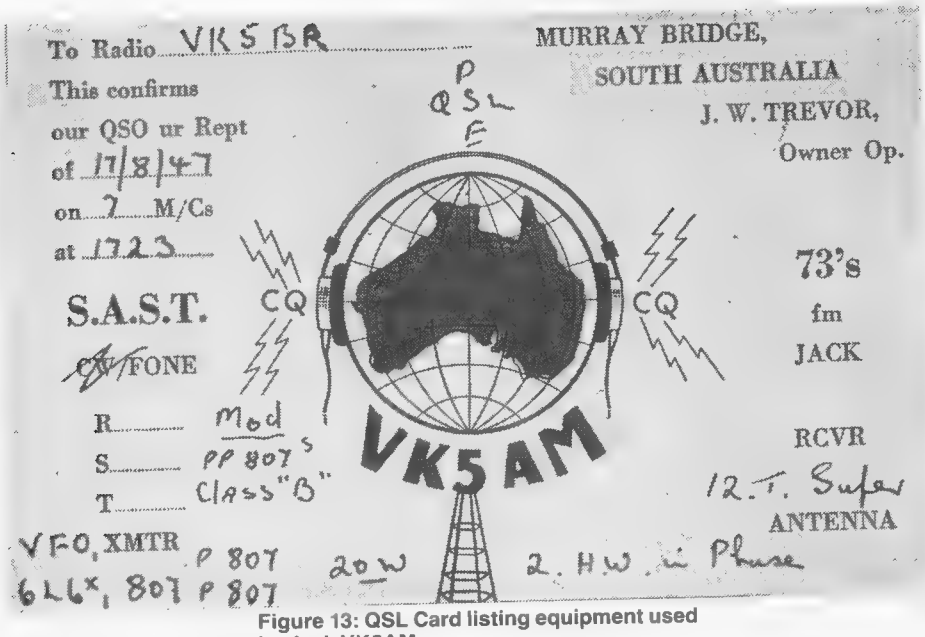


Figure 13: QSL Card listing equipment used by Jack VK5AM.

In the course of his business carrying out refrigeration service, Jack did a considerable amount of travelling in his utility vehicle within a 90 mile radius of Murray Bridge. He made use of this travelling to operate AM mobile radio using the call sign VK5WT, which was specially allocated for the mobile operation. His mobile transmitter RF unit consisted of a 5763 crystal oscillator driving a 5763 power amplifier. This was modulated by a further 5763 valve driven by OC71 transistor stages. (The OC71 was one of the first early germanium transistors to be produced). RF power from the transmitter was five watts operating into a tank whip antenna at the rear of the vehicle.

During the 1956 Murray River floods, Jack assisted in the emergency operations by supplying mobile communications. For an antenna, he used a 80 metre full wave vertical wire supported, ingeniously, by hydrogen filled balloons. At the time, he could not obtain weather balloons and used six toy balloons for the job. The idea worked well except in rain, when the water on the balloons added too much weight to maintain the balloons aloft. Jack later utilised the idea using real weather balloons from his home shack.

Jack operated in Murray Bridge until 1971 when he moved to Hope Valley and then, some 10 years later, ultimately retired to the Blue Mountains, where he is still an active radio amateur operating under the call sign VK2UP. Jack informs us that he now has a fantastic location for amateur radio, 3000 feet above sea level, with no electrical noise and can access 19 repeaters on two metres with a Slim Jim antenna. The winds, however, are terrific and not kind to weak-hearted antenna systems.

VK5BP

Bill Rice commenced as a radio amateur at Murray Bridge in 1947 with the call sign VK5BP. Bill operated on 40 metres with a transmitter consisting of a Franklin VFO using 6AC7 valves, a 6L6 driver and push pull 807 final amplifier, modulated by a further push pull 807 pair. The VFO was later modified to a Clapp oscillator using a 6J5 valve.

In 1948, Bill moved his equipment to Adelaide where he was attending university. From the suburb of Prospect, Bill could be regularly heard on 40 metres talking technical topics with John Lamprey VK5JL, when he possibly should have been studying for those many examinations!

Following graduation, Bill moved to Melbourne where, since 1960, he has operated from his home in Altona with the call sign VK3ABP. Bill, of course, is now your editor of *Amateur Radio* and is known for those VK3ABP two metre converters. Unlike today, the amateur operators of those earlier years built almost all their own equipment and Bill was no exception. The different thing about Bill is that he still builds it and you are hard pressed to find any commercially built equipment in his shack.

Bill recently retired from the Defence Department with an aim to do some of those things he previously did not have time to do, including those amateur radio projects.

It is interesting to observe that, quite apart from VK5BF, the other call signs, VK5AM, VK5BP, VK5BG, and VK5BR, all had earlier users in the 1920-1930 era. AM was previously allocated to P Kennedy of Unley, BG was previously used by Harry Kauper, one of the first early broadcasters, BP was previously allocated to R A Caldwell of Unley, and BR was previously used by the Blackwood Radio Club. (Some of the activities of these early experimenters can be found in references 1 and 2).

VK5MP

Len Porter came to Murray Bridge in 1952 to work at Broadcast Station 5MU following a period since 1934 with Broadcast Station 5PI at Crystal Brook. Len had previously been a wireless operator in the Royal Australian Navy during the spark transmitter era of the 1914-1918 war. During World War II he studied the Japanese signal code and, in 1943, was offered a position breaking codes with the intelligence service[1]. Len was an avid user of the CW mode of transmission and operated under the call sign of VK5MP which he appears to have first activated after World War II. He is believed to have been the first Australian amateur to contact all 48 states of the USA, as they existed at that time, on 28 MHz.

Len is no longer with us to tell any of his own story and we have been unable to find out any specific details of the equipment he used. During the period at 5MU, Len's permanent home was in Adelaide and he boarded at Murray Bridge. With this arrangement, it is not clear whether he actually operated from a Murray Bridge location.

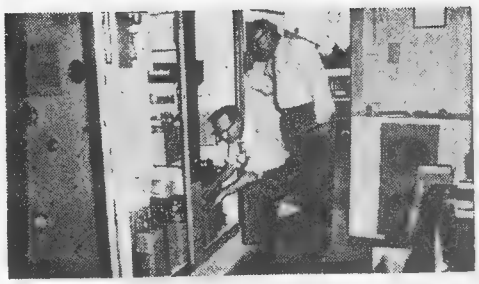


Figure 14: Bob Parasiers VK5RF (left) and Ron Dube, inspecting a new two kilowatt transmitter for Broadcast Station 5MU.

VK5RF

Another amateur operator was Bob Parasiers who, around 1953, also came to Murray Bridge to take up duty at Broadcast Station 5MU (see Figure 14). Bob had operated pre-war from the Adelaide suburb of Glandore with the call sign VK5RP and post-war with the call sign VK5RF. Having settled in the town, Bob operated as a radio amateur in Murray Bridge for many years.

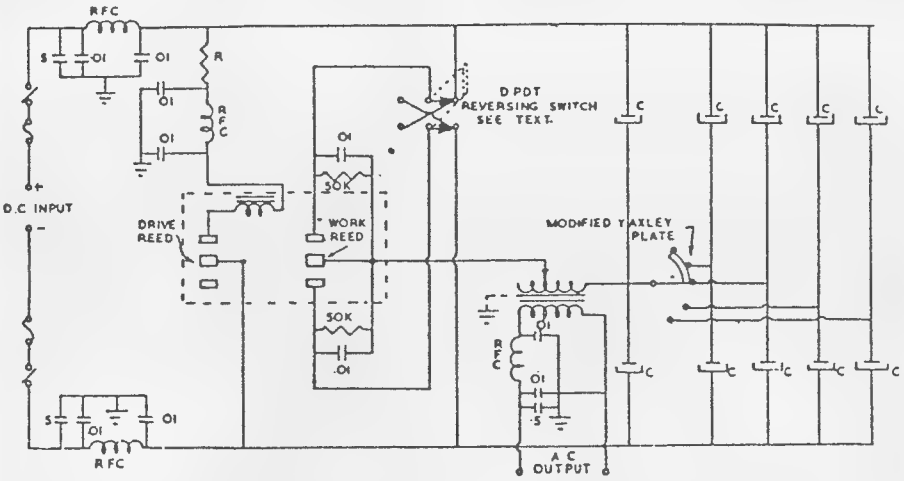
Like Len Porter, Bob is also now a Silent Key, and we have been unable to define what equipment he initially used at Murray Bridge. We do know that he commenced amateur radio operation in Adelaide around 1932. His early transmitter on the HF bands utilised push pull type 45 valves in a TNT circuit and his receiver was a three-stage TRF unit. On 200 metres, he used a three-stage crystal-controlled transmitter. The crystal control was probably necessary to satisfy stringent frequency stability requirements set down by the licensing authorities, at that time, for 200 metres. In those early years, amateur experimenters operated on that band. As broadcasting developed, stringent controls were progressively introduced, concerning the type of material transmitted, the operating hours and the standards of transmission. Ultimately, amateur operation on the broadcast band was prohibited.

Bob's final equipment at Murray Bridge, by then single sideband, included Swan 350 and 250 transceivers and an SSB transmitter, using 6146 final amplifiers, built by Gilbert Wilde VK5GX. Bob is thought to have joined the Silent Keys around 1969.

A further radio amateur, who worked at station 5MU for a short period around 1969/1970, was Ken Pledger VK5SV. Ken has been more recently listed in the call book at a Western Australian location as VK6SV, but we have been unable to contact him there to get details of his Murray Bridge amateur radio activities.

At this point, one could well have gained the impression that the local radio station 5MU had some affinity for amateur radio enthusiasts. In fact, the following holders of amateur radio licences have, at some stage, worked at 5MU: Frank Miller VK5BF, Bob Grundy VK5BG, Staunton Macnamara VK5ZN and VK5ZH, Lloyd Butler VK5BR, Len Porter VK5MP, Bob Parasiers VK5RF, Ken Pledger VK5SV, Kevin May VK5AXT and Colin Davidson VK5IM. There may well have been several more we have missed.

A further licence holder, for whom we have few records, is Keith Kilsby VK5PR, who is listed in call books, around 1947 to 1954, as resident at Mingary and Wiltyerong, both via Murray Bridge. (The Kilsby property, on the river near Tailem Bend, is thought to have been named Wilterong). Keith is believed to have been a school teacher, possibly residing at various locations and using



C—Electrolytic capacitors to suit loading.
All 0.01 uF. capacitors are mica.
All 0.5 uF. capacitors are 600 volt paper.

:.F.C.1—Special chokes, see text.
:.F.C.2—2.5 mH. receiver choke.
:—15 or 20 watt lamp, 220 v.

Figure 15: DC-AC Converter by Eric Cornelius which was used as a basis for a converter built by Bill VK5BP.

Murray Bridge as his postal base. He was apparently active prior to World War II as he is also listed in the 1937 call book at the town of Birdwood in the Adelaide hills.

There is another group who have been licenced amateur operators and have resided at Murray Bridge in the past, but were not active as radio amateurs at that time. This group included Tom Laidler VK5TL, Staunton Macnamara VK5ZN and VK5ZH, Jack Strachan VK5LH, John Millard VK5FC, Keith Angrave VK1RK and VK3BVK and Dave Goode VK5BF.

THOSE DC MAINS

Prior to around 1953, when conversion to AC was completed, Murray Bridge was supplied with a three-wire DC power supply system consisting of 230 volts positive referred to neutral (and earth) and 230 volts negative referred to neutral (and earth). For the early radio amateur, it could be said that, if you hadn't experienced DC mains then you hadn't lived, because these mains presented a number of problems. Firstly, every second house was connected to the negative outer, that is, 230 volts negative on the active wire. Normal practice for valve equipment was to connect the negative high tension line to chassis, but if this were applied on a negative outer, then the chassis was at a dangerous potential. Either the negative line had to be isolated from chassis or the complete chassis had to be isolated from earth and human contact.

The second problem concerned supply for valve heaters. On AC mains, a stop down transformer was normally used, but on DC this option was not available. On receivers, heaters were generally operated in a constant current series heater chain (typically 0.3 amp). For transmitting valves, that was not always practical as valves were often directly heated and, in any case, often required many amps, so consuming much power when derived via a series chain from 230 volts.

The third problem was the limitation in plate voltage available. To transmit, using input powers approaching 100 watts, some 600 to 800 volts was normally required at the final amplifier plates and operation from only 230 volts amounted to a severe restriction in output power.

Various methods were applied to cope with some of these problems. Frank VK5BF, had both mains outers wired to his house so that he was able to apply 460 volts to his final amplifier stage.

The house in which Bill VK5BP, lived had a negative mains outer, This provided some incentive for him to build a DC to AC inverter[4] (Figure 15), a device somewhat difficult to get going satisfactorily because of the electrical interference created by the vibrator contacts which switched the high voltage DC. The inverter provided electrical isolation of mains from his negative high tension line (and chassis), as well as providing the AC source which could be transformed to the required voltage levels within the transmitter.

Lloyd VK5BR, rewound a genemotor to make a DC-AC rotary converter, which was sufficient to supply his valve heaters, but not large enough to power his high tension supplies, originally designed to operate from AC. The rotary converter operated from some time remotely located in his mother's pantry to isolate the noise, but one day the converter decided to destroy itself in a cloud of smoke and it must be said that this did not impress his mother in the least! By that time, Bill had moved to Adelaide where there was 'real' power and his vibrator inverter was pressed into service at VK5BR to replace the rotary machine.

Jack VK5AM, recalls problems he had with electric motor commutator noise on the DC mains and the low voltage experienced in the late afternoon when housewives turned on their electric cookers. The voltage often dropped so low that his oscillator stage ceased to function. (The problem with DC power is that high voltage distribution is not a practical option and power must be supplied all the distance from the power station at consumer potential, requiring very heavy main feeders to reduce the voltage loss). To reduce his mains noise level, Jack ultimately buried a converter in an old iron trunk in the garden and connected the converter via lead covered wires to his radio shack. There must be something magical about old iron trunks because Bill also used one to house his inverter!

MORE ON EARLY EQUIPMENT

The transmission mode up to the 1950 era was either CW or AM on the 3.5, 7, 14 and 28 MHz bands. VHF had not been widely used in Murray Bridge at that stage except for the early work on five metres. Also, Bob VK5BG, and Lloyd have a early record in their logs of having communicated on the six metre band in July 1947. Lloyd apparently was able to get his HF transmitter operational at 50 MHz and worked cross band to Bob who was on 7 MHz.

Transmitters and receivers were all home built although in later years, Frank and Bob eventually obtained the National HRO receivers and Jack had a B28. Audio power output valves, such as the 6F6, 6V6, 6L6, 2A3 and 45 were pressed into RF service particularly for RF driver stages. The 807 (Figure 16) was a very popular transmitting tube which was in plentiful supply from disposals following the war years. Power supplies were quite bulky to provide continuous power at high voltage to the RF amplifier for the AM mode of operation and for the high power audio amplifier needed with plate modulation. Because of the equipment bulk, larger transmitters were often panel mounted in a rack (refer Figures 1, 5 and 11).

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Transmitting Beam Power Amplifier

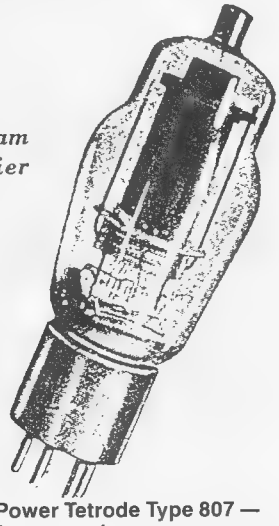

Figure 16: Beam Power Tetrode Type 807 — a very popular RF power valve.

Very early transmitters were self-oscillating or master oscillator — power amplifier units. However, by about 1940, with a requirement for better frequency stability, transmitters were essentially crystal controlled, the number of channels used being dependent on the number of crystals one possessed. The method of operation was to call CW on your own frequency and then listen around across the band for any reply from another station on his frequency. On contact, the QSO took place across two frequencies. A need for more versatility in choice of frequencies led to the development of more stable VFO units and Bill and Jack made use of these in their early transmitters.

Whilst superheterodyne receivers were generally band-switched, it was common practice to change bands on the transmitter by changing coils. Because each band change necessitated a retune of all RF stages, individual stage tuning and individual stage metering were provided as a front panel facility.

The early equipment built was, of course, all valve circuitry. The first small signal germanium transistors, extending into the high frequency spectrum, did not become available until about 1958 and power type transistors, for these frequencies, some years later. Integrated circuits had not been thought of and computing was in its infancy.

FURTHER DOWN THE TRACK

A more recent amateur operator is Kevin May, who was licenced in Murray Bridge around 1968, or a little earlier, with the call sign VK5ZKM. He later took up the call sign VK5AXT. Kevin is still resident in the town and controls operations at the local broadcast station.

A further more recent operator is Colin Schick VK5JP, who obtained his amateur radio licence in 1948, initially operating from the Adelaide suburb of Ovingham, but becoming inactive in the early 1950s. He took up residence in Murray Bridge in 1969 and recommenced amateur radio operations in the early 1970s when he purchased the Swan 350 transceiver, previously owned by the late Bob Parasiers.

Colin became involved with the Scout Jamboree on the Air (JOTA) and was active in the establishment of the Lower Murray Amateur Radio CLub based in Murray Bridge. Colin became the first president of the club and is still active in the club as its secretary. Information in the following paragraphs, concerning the background and activities of the club, has been presented by courtesy of Colin on behalf of his club.

THE LOWER MURRAY AMATEUR RADIO CLUB

The Lower Murray Amateur Radio Club was formed at a public meeting held at the Further Education Centre (FEC) in Murray Bridge on October 20, 1976. The meeting was well attended by people of many occupations in Murray Bridge and the neighbouring towns of Mannum, Tailem Bend, Jervois and other places. Colin Schick was elected president, Dean Jolly was elected vice-president, Richard Thiel was elected secretary and Kym Were was elected assistant secretary/treasurer. Other committee members elected were Barry Warnecke, David McNichol, Bruce Steven and David Edmunds.

Meetings of the club were held weekly in a classroom at the FEC and tuition was initially provided in radio theory by Richard Thiel, Dean Jolly VK5AKC and Colin Schick VK5JP. Colin also conducted Morse code practice. The club affiliated with the WIA and continued with lectures at the FEC for several years. A number of club members gained Novice, Limited and Full Call licences during their first year of membership. Barry Warnecke, from Jervois and now VK5ABW, gained his Novice and Full Call, then conducted classes at Tailem Bend to assist persons in that area with study for their licence.

Amateur radio displays were set up, in conjunction with other functions, at Mannum, Tailem Bend and Murray Bridge to publicise the hobby of amateur radio (refer Figure 17). The club has regularly provided stations for the Girl Guide and Scouting fraternity to take part in JOTA in the Lower Murray towns. Weekend camping trips at the Coorong and a weekend camp-in at Frahn's farm, at Monarto, have given members the opportunity to experiment with their equipment in more difficult conditions than experienced at their home QTH.

The incorporated club[5] now has permanent club rooms in the Murray Bridge Johnstone Park and operates with its club call sign VK5ALM. Station equipment is a TS520S transceiver with digital readout, a three element beam and a wire antenna. A club network is operated on Monday nights commencing at 1000 UTC on a frequency in the vicinity of 3.620 MHz. A regular controller of the network is Ray Turner VK5UY and operators on the network include club members from the surrounding district, as well as others, often from other Australian States and as far away as New Zealand.

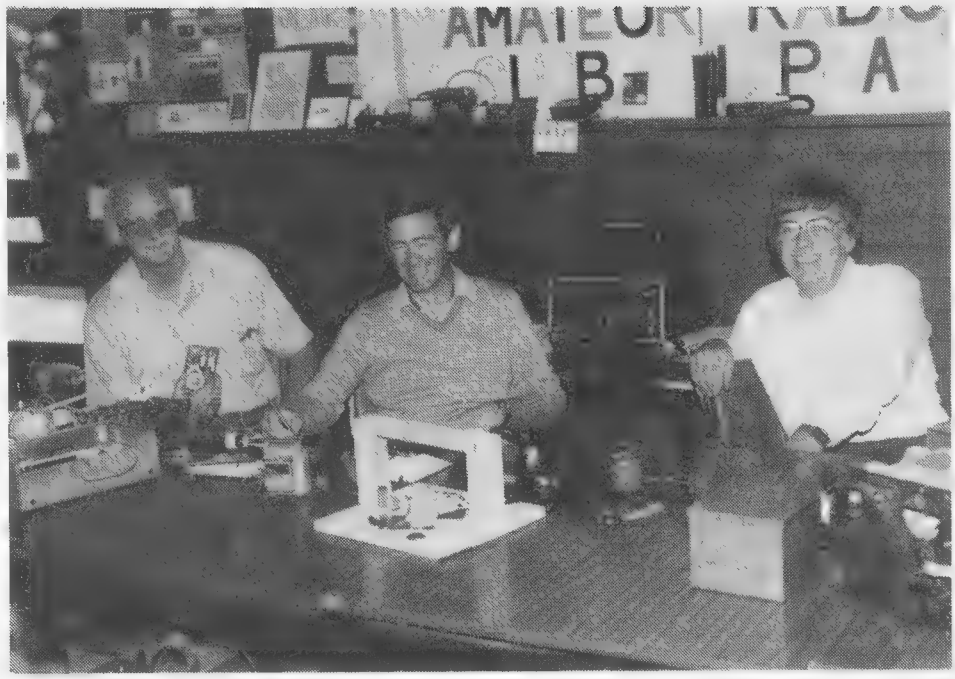

Figure 17: Lower Murray Amateur Radio Club Display in conjunction with a Trade Fair at Murray Bridge. From left: Chas Swan VK5WG, Jeff Nottage VK5YU and Colin Schick VK5JP.
(Unfortunately, Chas passed away in mid-December 1987).

The club offers the *Bunyip Award*[5] to interested operators and shortwave listeners who work or log the club station and members of the club. The Bunyip is a mythical animal which has been materialised in a model, built as a tourist attraction on the banks of the Murray River at Sturt Reserve, Murray Bridge.

The club is now in its 11th year of operation and approximately 25 amateur radio operators, in the Lower Murray area, have gained their operating licences through tuition from the club. Not all of them have been able to remain with the club, but the club's training program has certainly been a notable achievement.

PRESENT OPERATORS

Over the last decade, a number of amateur operators have held licences in Murray Bridge, some of them eventually moving on to other places. At the time of writing, the resident holders of amateur radio licences in Murray Bridge included Ray Turner VK5UY, Colin Schick VK5JP, Kevin May VK5AXT and previously VK5ZKM, Phil Stretton VK5YI and previously VK5NSO and VK5AKK, Colin Davidson VK5IM and previously VK5AJD, Richard Bowyer VK5NRB, Neil Peake VK5NTO and John Andrae VK5IH. Others who have recently moved on from the town, include Dean Jolly VK5AKC, Karl Saville VK5AHK, Sid Dalton VK5ASX previously VK5NSX, and Sid's wife VK5NUA. Other operators, in the neighbouring towns and district, also have connections with the Bridge through their membership of the Lower Murray Club.

THE END

Here our discussion ends. Within the limits of our fading memories and what records could be found, we have recalled an era of early experimentation when amateur radio operators built their own equipment, often to their own design. We have discussed, in chronological order, the various radio amateur enthusiasts who were active in Murray Bridge and discussed some of their activities and the equipment they used. We have started with an era around 1924 when radio experimenters operated on the broadcast band and we have concluded with some background of the radio club which is now based in the town. Some of us were born and brought up in the town but eventually left it and some of us came into the town from elsewhere and stayed there. Murray Bridge has been our town and we submit this document as its amateur radio story.

REFERENCES

1. JOHN F ROSS. *This History of Radio in South Australia 1897-1977.*
2. MARLENE AUSTIN VK5QO. *The First Sixty Years 1919-1980.* Amateur Radio *October 1985.*
3. THE ADELAIDE TELECOMMUNICATIONS MUSEUM, located near the GPO, has what is probably the most extensive collection of historic radio equipment in the Southern Hemisphere. For anyone interested in the history of radio, a visit to this museum is an enlightening experience.
4. VIBRATOR INVERTER. *Originally published in Proc. IRE (Aust) and rewritten for* Amateur Radio *February 1949 by Eric Cornelius VK6EC.*
5. Information on the activities of the Lower Murray Amateur Radio Club Inc, (including the Bunyip Award) can be obtained by writing to the club via PO Box 234, Murray Bridge, SA. 5253, or tuning in to the club network on Monday nights at 1000 UTC in the vicinity of 3.620 MHz.

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Unfortunately, Bob VK5BG, became a Silent Key shortly after this article was written.

TOPICAL TECHNICALITIES

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***Topical Technicalities* tries to provide readers with information which is not found in amateur text books and which is difficult to find in other text books.**

Also, a different 'slant' on a familiar subject is presented where that could help understanding. The following professional standard notation for representing values of emf, current and power belongs to the 'hard to find' category. It is a very practical system recommended by Topical Texhnicalities to AR editorial staff and contributors.

The basic principals are:

a) Instantaneous values of quantities which vary with time are represented by lower case letters —
i for current, e or v for emf and p for power.

b) Fixed values such as maximum, average, effective and rms are represented with upper case letters —
I, E or V and P.

c) Constant value unidirectional (dc) and instantaneous total values are further identified by upper case subscripts.

d) Alternating values are further identified with lower case subscripts.

e) A single subscript is sufficient if there is no ambiguity, or use as required; eg v_{CE} for collector to emitter volts and i_c for the instantaneous value of the total (dc + ac) collector current.

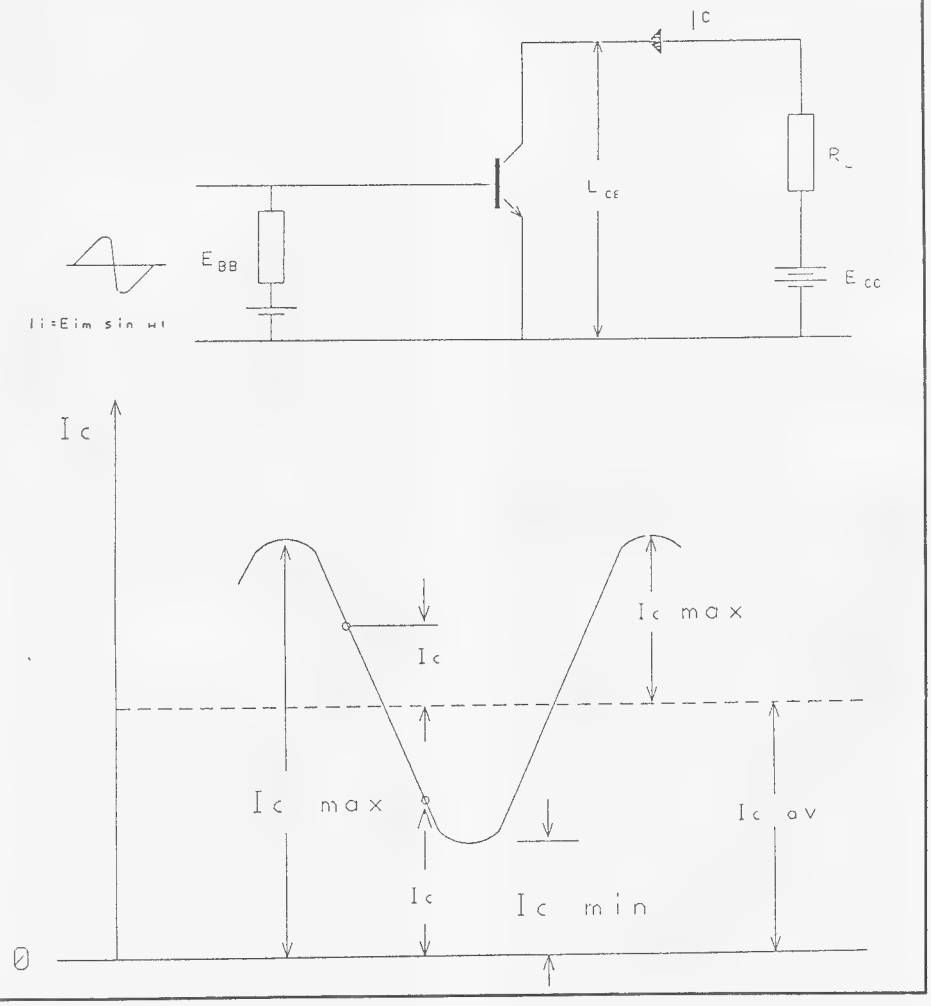
f) Double subscripts are always used for supply volts and current; eg V_{CC} and I_{CC} for collector supply voltage and current.

If that notation is memorised and used by all there will be no need to append lengthy glossaries to each article or diagram. The following is an example:

$i_c = I_c + I_c \sin wt$

It is shorthand for 'the time varying collector current i_c comprises a constant value unidirectional (dc) component -value I_c plus a sine wave component (ac) with amplitude I_c. Figure 1 illustrates an application to transistor circuits.

Figure 1.
i_c = instantaneous value of the total current.
i_c = the instantaneous value of the alternating component of i_c.
$I_{c\cdot max}$ = the maximum (peak) value of i_c.
$I_{c\cdot max}$ = the maximum of the alternating component of i_c.
$I_{c\cdot min}$ = the minimum of i_c.
$I_{c\cdot rms}$ = rms of i_c.
$I_{c\cdot rms}$ = rms of the alternating component of i_c.
E_{CC} = collector supply volts.
Apply the same logic to the base circuit currents and the circuit voltages.



More about standards — standards are a necessary part of intelligible communication. There have to be standard meanings for the words we use and a standard usage. Dictionaries try to do the task for us but unfortunately that effort is frustrated by those who choose their own meaning for the words they use. That habit is prevalent among technical people and radio amateurs are copying their professional counterparts by choosing their own set of meanings, and at the same time, claiming to be expert communicators.

The habit seems to be most prevalent among those who are using amateur machine telegraphy for computer intercommunication. Take, for example, the word 'data'. Which meaning will a novice choose from the following selection?

a) Oxford Dictionary — *data* the plural of datum.

b) Publication W — *data* digitally coded material (or information).

c) Publication X — *data* means numbers, facts, or anything already known that (sic) is needed to solve a problem.

d) Publication Y — (i) *data* are unorganised facts which appear as a collection of numeric and/or alphabetic and/or other characters in some representations.

e) Publication Y — (ii) *data* are unorganised facts which are represented as a collection of characters, or which could be so represented.

The authors W, X, Y seem to be attempting to share their confusion with their readers. At least they have attempted to tell us the meaning they have chosen, many others do not bother. What is wrong with the dictionary meaning? The fact that data is enciphered, encoded and translated to electrical impulses shouldn't change its meaning.

What is the meaning of 'data mode'? Is it an 'unorganised facts which are represented as a collection of characters, or which could be so represented' manner of communication; or maybe simply 'the many things known or granted' manner of communication?

Spare a thought for those people trying to acquire an understanding of the pastime. Mouthing hard words does not prove you understand hard things. Try some plain language, you will be surprised.

THE FUTURE OF AMATEUR RADIO

by the Future of Amateur Radio Working Party

52nd FEDERAL CONVENTION

A report by the Future of Amateur Radio Working Party was considered at the 52nd Federal Convention, held in Melbourne on the last weekend of April. A presentation on the report was given by the Working Party, following which the report, and in particular its Conclusions and Resolutions, were debated for around four hours. Two recommendations were later modified to clarify their intent and the amended report adopted. The revised recommendations follow:

It is recommended the WIA adopt the following:

1 Note these Recommendations are based upon members opinions and comments as expressed directly or indirectly to the Working Party.

2 Agree the Amateur Radio Service must begin detailed planning soon, both nationally and internationally for WARC 92 and face the IARU Region 3 Conference in Seoul with definite proposals.

3 Note the Australian radio amateur is permitted a wide range of emission modes, specified on his licence as permitted occupied bandwidths. This approach permits considerable flexibility for the user, both now and in the future and agree this should be retained. Furthermore, note there is a direct relationship between the demonstrated theoretical knowledge level of an amateur licensee and the complexity of authorised emission modes.

4 Agree that the WIA initiate no change to the amateur Morse code proficiency requirements at this stage, pending further study of membership attitudes.

5 Endorse the WIA policy to press actively for an amateur licence currency in excess of one year with commensurately reduced fees. The longer term goal is an internationally accepted licence along the lines of the European CEPT scheme.

6 Agree the WIA position for frequency allocations for WARC 92 and convey that position to IARU members at the Region 3 Conference at Seoul 1988.

7 Agree the Japan/Australia reciprocal licence agreement be examined for possible bias against Australian amateurs, more specifically the amateur novices and if confirmed, redress be sought.

8 Agree the formation of WIA/DOTC joint committees be encouraged to facilitate communications with the Department and promote self-regulation of amateur radio.

9 Endorse the licence option for an additional entry point within the existing novice to unrestricted licence range and represent it to DOTC.

10 a) Endorse the preferred options for amateur licence restructuring as illustrated in the examination and licence models shown below and seek implementation at the earliest opportunity by DOTC.

b) Direct the Working Party to further develop proposals for suitable frequency allocations to be assigned to each licence grade.

11 Endorse the editorial policy of *Amateur Radio* magazine in publishing the current series of home construction and simple projects which are satisfying an expressed demand.

12 Agree the matter of WIA channels of communication needs examination and perhaps reorganisation if the current membership to Division and/or Division to Federal system is confirmed cumbersome and inefficient.

13 Note the Working Party has completed its duties as directed and task it with implementing these recommendations.

EXAMINATION MODEL.

THEORY		BASIC	FULL
MORSE	NIL	VHF NOVICE	VHF INTERMEDIATE
	SLOW	NOVICE	INTERMEDIATE
	FAST		UNRESTRICTED
REGULATIONS		ONE TEST	

LICENCE MODEL.

GRADE	TECHNICAL	BANDS
VHF Novice	CW/SSB/AM/FM Low Power	Novice VHF/UHF
Novice	CW/SSB/AM/FM Low Power	Novice HF/VHF/UHF
VHF Intermediate	All Modes High Power	All VHF/UHF
Intermediate	All Modes High Power	Novice HF All VHF/UHF
Unrestricted	All Modes High Power	All VHF/UHF All HF

NOTE: The licence model above indicates general principles adopted and requires further development by the Working Party under Recommendation 10 (b).

WHERE TO NOW?

As you will see from Recommendation 13, the Working Party continues in existence and is tasked with implementing these recommendations. This approach was taken with the activity being progressed as a project by the Working Party, separate from normal Executive actions, as the Executive found over the past few years they were able to carry out, at best, one project each year. Obviously this year Executive has a full workload with the IARU Region 3 Conference plus progressing the review of the corporate structure of the Institute.

As stated in an earlier AR paper by the Working Party, these recommendations are evolutionary rather than revolutionary. They tend to follow membership opinion rather than guide it, however a few items may generate more opinion from members.

WARC 92 AND IARU REGION 3

Recommendations two and six, concerning WARC 92 planning, have already commenced with the Convention adopting a set of guidelines for negotiations both within Australia and at the IARU Region 3 meeting in Seoul in October this year.

MORSE CODE

Despite some representation (principally from Queensland) to seek removal of Morse code from amateur examinations, a majority of members appear to favour maintaining the status quo. This is reflected in the amended Recommendation 4. Note that a number of overseas administrations accept our 10 WPM as equivalent to their 12 WPM for reciprocal and visitors licence purposes.

The Convention was advised the European CEPT licence proposals fall short of being a Euro-licence, for they apply only to temporary visits between subscribing countries and also apply only to two licence classes, equivalent to out limited and full licences. Nevertheless, we should strive for CEPT recognition as a first step and to assist Australian amateur visitors overseas. All that is needed initially is for DOTC to indicate the CEPT licence classes on the Australian licences and subscribe to the CEPT agreement.

SELF-REGULATION

Self-regulation, as distinct from de-regulation, has been the aim of both the Department and the WIA. It has brought in its wake an increase in poor on-air behaviour which, in the past, would have attracted the attention of now defunct advisory committees. To bridge this gap and maintain close relationships with DOTC, the formation of local joint WIA/DOTC committees is recommended. These committees need only be as formal as the participants desire, provided they permit regular contact between the two parties involved. Feedback of their observations to WIA Divisions and their broadcasts would assist in restoring our once proud operating standards.

EXAMINATIONS

Although examinations and licences are connected, concern about the former has all but disappeared as amateurs wait for the first of the devolved examination series. No doubt it will take several years for the new system to settle down and provide what it is intended to do, namely an affordable examination available at reasonable intervals and at the applicants convenience. The examination model does not introduce any more subjects, yet allows an extra licence grade to be introduced.

LICENCES

A recent move to widen the privileges for combined licence holders (K calls) appeared as a

separate Convention agenda item but was withdrawn, for the licence model of Recommendation 10 incorporates these views.

The Working Party was re-tasked by Recommendation 10 (b) to provide detailed proposals as to frequency bands to be ascribed to each of the licence classes of the licence model. Some of these are obvious, namely unrestricted and VHF intermediate, however this is a good opportunity to review the novice frequency allocations, both the HF band segments, which have existed now for 13 years and the recently granted 146-148 MHz FM segment. The Working Party's Paper 4 on licence restructuring made some suggestions as to increased HF allocations for novices, namely all of the 3.5 MHz band, an increase on 21 MHz and also an increase on 28 MHz to allow FM and consequently repeater operations.

These increases must be weighted against the need to maintain an incentive to upgrade, however the proposed intermediate licences can also be seen as a suitable objective for many, who will find their privileges adequate for their needs.

AMATEUR RADIO MAGAZINE

Our magazine satisfies an important need by providing amateurs with regular tangible evidence of their Institute membership as well as providing a vehicle for passage of information and a means of promoting the technical side of the hobby. With equipment costs continuously rising and a desire to recruit more younger members, the magazine has an important part to play in furthering the home construction of modest receivers, transmitters and accessories. Specialist kit sales by Divisions on a co-ordinated basis is another way the WIA can assist its members.

COMMUNICATIONS WITH MEMBERS

The Working Party discovered that members are generally not aware of the complicated ways in which the WIA is governed. Through its co-ordinated approaches of *Amateur Radio* magazine, Federal Tapes on Divisional Broadcasts, and Federal Councillors, the Federal Body has very good means at its disposal for the dissemination of information. In contrast, the return flow from members, due to the filtering actions of the Divisional structure, is limited to letters to the editor of AR and some direct correspondence that bypasses Divisions. This passage of information must be improved, both as to quantity and quality, for often the proposals of the vocal minority are purported to be the views of the silent majority.

Noticeable improvements have been observed in those Divisions which conduct "Conferences of Clubs" or like forums to solicit members views, however at times these endeavours are frustrated by lack of background knowledge by the general membership. This matter will be referred to those responsible for reviewing the corporate structure of the WIA.

NEXT ACTIONS

Once again we ask, *where to now?* The Future of Amateur Radio Working Party will continue as directed and prepare submissions and plans to seek the implementation of these recommendations. If you have any comments on them please write, via your Federal Councillor, as before. But one last plea, whatever is introduced must be simple to understand, administer and police for the amateur effort available is predominantly volunteer and our government is firmly committed to "user pays" for its services. Let us not request a monster and price ourselves off the air!

—Compiled by Ron Henderson VK1RH, Federal Executive Member

IMMUNITY —

the sword of Damocles

In his address to the recent WIA Federal Convention, the Assistant Secretary, Radiocommunications Branch, DOTC, Mr John McKendry stated that it was becoming more and more difficult for his Department to completely "defend" the amateur position in certain immunity problem situations, particularly where Ministerial complaints were involved.

He commented that sometimes the deciding factors in an EMC dispute could become social and even political, rather than technical, and that the Department, as the final arbiter, has already been forced to apply certain restrictions to amateur operating conditions in extreme and isolated situations. This had occurred despite the fact that the amateur in question might rightly claim that technically he was without fault.

This disturbing trend is world-wide. In his annual report to the Convention, the Federal Standards Co-ordinator highlighted the problem in the following terms:

> "There have been disturbing developments in Canada, the UK and other parts of the world where limits have been imposed on amateur operations because of deficiencies in the immunity of domestic electronic equipment. This has come about because of the lack of appropriate EMC performance standards for (primarily) television receivers, video cassette recorders and AF amplifiers, although many other types of domestic electronic and electrical equipments can become involved at times. Secondly, as demonstrated in the Canadian Ravenscroft case, a lack of understanding of the logical apportionment of responsibilities for detection and clearance of the sources of the problem on the part of those involved in negotiations, can react most unfavourably on the Amateur Service."

What is being done to solve the problem? The answer is obviously complex. One of the most important needs, recognised many years ago, is the specification and application of appropriate immunity performance standards for domestic electrical and electronic appliances which are enforceable by regulation. This will counter the present justifiable response to complaints of defective immunity, namely that the apparatus is operating to current Australian and international standards.

In the early 1980s, the then Department of Communications was fired with enthusiasm — the Radiocommunications Act — the essential vehicle for application of the required standards, was proclaimed. The Australian Standards Association, eager to assist, formed special working committees to produce Australian immunity standards which could be applied at least until the International Electrotechnical Commission (IEC) and its associated Special Committee on Radio Interference (CISPR) were able to produce truly international standards.

The WIA has made its contribution, modest as befits a relatively small hobby organisation — providing a chairman/member of the Immunity WP of the SAA and by co-ordinating Government, instrumentalities and Industry participation of the WP activity.

Other countries such as the FRG, Canada and the USA have already produced and applied national standards on immunity — but Australian efforts have foundered. Support from Government and industry has waned and the DOTC, which was once in the forefront of the action, has failed to make any significant contribution over the last few years. Australia has now joined the vast majority of nations waiting on the sidelines for the IEC and CISPR to complete the job!

In the meantime the WIA, mainly through the co-ordinating processes available at the regular WIA/DOTC Joint Meetings, has been able to head-off EMC/immunity problems which might otherwise have become political issues. You may be assured that everything possible will continue to be done to counter the ominous trend discussed at the 1988 Convention. However, until the essential immunity standards are in place, the threat of restrictions on amateur operating conditions will remain. This will be a long and difficult period!

Will the Horsehair Hold!

NOTE: For those unversed in the classics, Damocles was a courtier whom King Dionysius of Syracuse treated to a splendid feast, but over whose head he caused a naked sword to be suspended by a horsehair, as a lesson that danger may overhang greatness and outward felicity.

—Contributed by Allan Foxcroft VK3AE, former Federal Standards Co-ordinator

THIRD PARTY TRAFFIC

This report has been prepared following the discussions on Third Party Traffic at the 1988 Federal Convention.

Last September, *Amateur Radio* magazine published a factual and explanatory article on Third Party Traffic (TPT). That article had been checked with the DOTC before publication and its contents agreed as substantially accurate by the Department. Since that time some Australian amateurs have made representations to DOTC concerning international temporary Third Party Traffic arrangements for health and welfare traffic during natural disaster situations and also pressed for a Third Party Traffic agreement with New Zealand.

The inquiries concerning New Zealand led to DOTC formally defining Third Party Traffic. Their definition adopts the dictionary representation. It is restrictive and has led to the editing of ZL messages from Australia Bulletin Board Services (BBS). Essentially, DOTC defined the sender and receiver as the first and second parties and any other incidental receiver, amateur or not, as a third party. Consequently, ZL traffic into an Australian BBS could not be on-forwarded to a third party.

Unfortunately, the New Zealand Radio Frequency Service (RFS) defines third party traffic much more liberally and the ZL actions described above are not in conflict with their regulations, only ours!

A DOTC official, in addressing the 52nd Federal Convention, stated he wished to get a collective response on TPT from the WIA, as distinct from those of small pressure groups. Indeed, he would prefer the individuals involved to work through the WIA.

Having stated the definition of "third party" above, he asked what do the Australian amateurs and the WIA want? If the Australian approach is out of line with other countries and the WIA has the opportunity to discuss this at the IARU Region 3 Conference in Seoul during October 1988, then the Department would examine their policy.

DOTC also invited comment from the WIA on the setting up of international TPT arrangements on a temporary basis for health and welfare messages arising from natural disasters.

At the Convention, the Federal Executive introduced an agenda item proposing "this Council agree a definitive policy on Third Party Traffic and represent it to DOTC". The motion was carried unanimously and generated two related motions which were also adopted unanimously.

Firstly "this Council supports IARU Administrative Council Resolution 85-7", which reads:

> The IARU Administrative Council invites the International Secretariat:
>
> 1. to review Article 32 of the International Radio Regulations, and to identify for the Administrative Council the modification that may be required to facilitate the development of the world-wide packet radio network, bearing in mind the concerns held by administrations regarding such communications;
>
> 2. to collect from member-societies information on how their domestic regulations limit to facilitate the development of packet radio, with the objective of determining what common problems may exist; and
>
> 3. to develop recommendations for Administrative Council consideration as to how these problems should be addressed, with a report to be rendered shortly prior to the next meeting of the Administrative Council.

Australia responded in 1986 to a request from the International Secretariat for national societies views.

The second Convention motion was "that this Council re-affirms minute 84.09.16". The minute, passed in 1984, states:

> The Executive should pursue strongly the matter of Third Party Traffic using the following criteria:
>
> 1. All countries with whom the USA has third party agreements,
> 2. All countries in which Australian Service Personnel are stationed,
> 3. The United Kingdom.

The Council agreed the first approach to setting up TPT agreements should be contact by the WIA with the other nation's national society representing its radio amateurs. A favourable response would lead to a request to DOTC to initiate or renew negotiations.

During discussions, the Council confirmed their wish that any amateur to amateur contacts should not be considered third party actions because of the open broadcast nature of amateur radio communications. The Council wished these views to be passed to DOTC and this has now been done.

On the subject of temporary international Third Party Traffic agreements for welfare and health purposes during natural disasters, the Federal Council was undecided and believed the matter needed further research. Was the need genuine or created in part by some zealous amateurs? Were the returns really worth the effort and did amateur radio have the extensive resources necessary to carry out an effective and efficient operation? The Federal WICEN Co-ordinator was of the opinion that the National Disaster Organisation and International Red Cross should be consulted as to their views. The Federal Executive will research this matter over the next few months.

SUMMARY

1. The WIA seeks to have any amateur to amateur communications to not be considered as Third Party Traffic.
2. The Executive will continue its endeavors to obtain TPT agreements with the nations defined in the 1984 Convention minute.
3. The WIA support the IARU International Secretariat's views that Third Party Traffic matters should be liberalised through bilateral agreements between nations and/or a less constraining definition of Third Party Traffic in domestic regulations.
4. The merits, constraints, advantages and disadvantages of temporary TPT agreements, together with the views of the international relief agencies involved will be examined by the Executive and a position put before Council.

—Prepared by Ron Henderson VK1RH, Member of the Federal Executive
May 17, 1988

CEPT LICENCES

Talking to European radio amateurs or reading European amateur literature, one comes across that "mysterious" expression *CEPT Licencing*.

One would gather that it is some sort of European Common Amateur Radio Licence, and even most European amateurs have similar thoughts and hail the introduction of the CEPT licencing system as being equal to the much hoped for Euro licence.

The executive of Vereniging voor Experimenteel Radio Onderzoek (VERON), the Dutch national amateur organisation, recently published a history of CEPT licencing in their monthly journal *Electron*.

Besides the history, the VERON executive also explain the role the Dutch PTT has played, and is still playing, in making this licencing system more liberal, aiming to make it eventually a real Euro amateur radio licencing system.

CEPT stands for Committee Europienne des Postes et Telecommunications, a union of European Post and Telecommunication authorities. Twenty six European countries are members.

The CEPT accepts certain recommendations from members to facilitate some standardisation of technical, operational and administrative procedures. The member countries are obliged to accept particular recommendations in-toto if they wish to introduce it in their own country. Should a particular PTT have any objections to one or more clauses in a recommendation, the only way open to that particular administration is not to introduce it at that time and attempt to introduce amendments at a following CEPT conference.

Prior to the acceptance of CEPT licencing, many European countries already had reciprocal agreements. This required a visiting amateur to fill in numerous forms to apply for a visitor's licence, often at great cost. The "user pays" principle is rife and, especially during holiday periods, the licence fees were liable to be rather exorbitant, including long waiting times, to pay for all the overtime that a particular administration had to incur.

Neither the IARU Region I societies, or the administrations were very happy with this situation. Finally, in 1981, IARU Region I instituted a special committee, the Common Licence Group (CLG), to collect and summarise ideas from national amateur organisations in a proper format for presentation to the European administrations with the ultimate aim to institute a Common European Amateur Radio Licence.

The PTTs, united in CEPT, commenced an intense study to find a solution, acceptable to all CEPT members, regarding amateur radio licence qualifications.

The CEPT general meeting in June 1985, issued Document T/R 61-01 and the official text was distributed to all member PTTs in December 1985. It should be noted that this document does not attempt to make all European licences equal, that is very difficult anyway as licence qualifications vary from country to country. However, the first big step in the right direction was made.

Document T/R 61-01 will enable licenced radio amateurs to operate during their annual holidays, from a foreign country, either portable or mobile, without going through the traumatic experience of applying, and waiting, for a visitor's licence, probably only for a period of no more than four weeks. The visiting amateur is further allowed to operate the station of a licenced local amateur. However, this can only happen when that particular country has accepted Document T/R 61-01 (note, the Eastern Bloc countries are not members of CEPT). This CEPT regulation does not apply if one intends to stay in the country for a longer period than an average holiday period and it will definitely not apply to those amateurs who happen to have a holiday home in that particular country. It is quite common for Germans to have holiday homes in the Netherlands, or the Dutch to have second homes in Luxembourg. In those cases, one must apply for a genuine visitor's licence.

Document T/R 61-01 recognises two classes of amateurs:

CLASS 1 — This classification will only be issued to amateurs who have passed an examination, including a Morse test. Generally, Class 1 would be issued to those with the equivalent of the Australian AOCP It will entitle the holder to use all amateur frequencies as authorised in the country of destination.

CLASS 2 — This covers only the VHF UHF and higher amateur bands applicable in the country of destination. Is is usually issued to those with the equivalent of the Australian AOLCP.

The PTT of a country which accepts the CEPT ruling has to establish the following:

a. Establish which national licences are acceptable to be issued with a Class 1 licence. The PTT must consider a clause in the CEPT document which says that a CEPT class can only be considered equal to the local licence rules if the rules applicable in the other country do not vary to a great extent from the local rules.

The Netherlands PTT ruled that CEPT Class 1 equals the A and B licences (VK AOCP), whilst CEPT Class 2 equals the C licence (VK AOLCP).

b. As an amateur with a CEPT licence can only operate from a foreign country within the technical qualifications applicable to his own national licence, a PTT must first establish the regulations to be followed.

The Dutch PTT decided that a Dutch CEPT Class 1 licencee may operate in another country according to the regulations applicable to the Dutch A licence, while a Dutch CEPT Class 2 amateur follows those applicable to the Dutch C licence.

It is further important to know that, regardless of the above, the visiting amateur must obey the local regulations as applicable to the local Amateur Radio Service.

c. The PTT must supply the amateur with a document which clearly states, in four languages, the CEPT class of operation and, preferably, also list of countries where a CEPT licence is valid.

(The Dutch PTT has all this information included in the annual renewal licence a Dutch amateur receives upon paying his annual licence fees).

Norway (May 1, 1986), Germany (May 26, 1986) and The Netherlands (July 10, 1986) were the first European countries to adopt Document T/R 61-01. In the meantime, 12 of the 26 countries have adopted this document, namely Austria, Denmark, France, Liechtenstein, Luxembourg, Monaco, Switzerland, Sweden and Belgium. Sweden only allows Class 2 operation for the time being. Portugal has indicated that it will introduce CEPT licencing in the near future.

THE DUTCH PTT AND CEPT

The Dutch PTT appears to be the most innovative of the CEPT members. In July 1987, they forwarded a letter to all CEPT members who had not as yet introduced the CEPT licencing, stating that all radio amateurs from those countries whose licences are equal to the CEPT Class 1 or 2 licences, will be allowed to operate from The Netherlands under T/R 61-01 conditions, provided their local licence papers clearly indicate the appropriate CEPT class. This is possible because many European countries have already, unofficially, notified CEPT of their intention to adopt T/R 61-01 but, due to the lengthy local procedures, are not yet in a position to introduce the document in their respective countries.

The Dutch PTT, in the same letter, asked of the administrations concerned to issue the Dutch amateurs with a free reciprocal visitor's licence. The reasoning behind this suggestion is, that "we give your amateurs the opportunity to operate from The Netherlands without extra paperwork and payment and, while we acknowledge that you still have legislative problems, we think it is appropriate that our Dutch amateurs should not pay for the delay".

THE DUTCH D-LICENCE

This licence is the novice licence in The Netherlands. They are only allowed to operate on 144-145 MHz and this leaves the Dutch novice out in the cold. This licence is definitely not equal to CEPT Class 2. The Dutch PTT tried, in 1985, to introduce a few more CEPT classes, among them a Class 3 to cover the Dutch novices, but without success. VERON is still working to have this corrected and the Dutch PTT is more than willing to assist. But both VERON and the Dutch PTT agree that it would not be correct to equate a D licence with a C licence without the licence holder passing the appropriate examination.

The Dutch southern neighbours, Belgium, have found an interesting solution. In December 1987, a new act was promulgated from CEPT. It also introduced a separate Class 3 licence, 144-145 MHz, very similar to the Dutch D licence.

VERON immediately approached the Dutch PTT and, in February 1988, PTT advised that they were willing to issue the D licencees with a licence indicating that their certificate was equal to the Belgian Class 3 licence. Further, PTT is negotiating with Belgium to approve reciprocal licencing of Belgian novice amateurs. These exchanges will still "obey" CEPT regulations, namely a very short, temporary stay in the respective countries.

THE FUTURE OF AN EURO LICENCE

Although the present CEPT ruling is a step in the right direction, the ultimate aim is still a Common Licence for Europe, or even Region I. This will be a great, uphill battle, considering the great variations in local regulations and examinations. Neither VERON nor the IARU CLG expect short-term results.

The European amateur has a very active and sympathetic ally in the Dutch PTT/Radio Control Service. They are willing to consider well thought out proposals from IARU Region 1 CLG and bring those proposals to future CEPT conferences.

Step by step the evolution continues, first the possible introduction of a CEPT Class 3 licence to cover the novices, then the possibility whether or not non-CEPT countries may be able to join the scheme on a voluntary basis. And immediately two countries spring to mind — New Zealand and Australia. Many of our amateurs are going overseas to Europe and it would be great for them to have a licence acceptable to many European countries, come off the plane, take the hand-held and call CQ on the local repeater. What a thought, but, who knows, administrations are, after all, very innovative!

—Summarised from an article which appeared in *Electron* April 1988, written by PA0QC and PA0TO, members of the VERON/PTT Working Party, and contributed to AR by John Aarsse VK4QA

Equipment Review

KENWOOD

Kenwood TM-721A Dual Band FM Transceiver

Gil Sones VK3AUI
30 Mocre Street, Box Hill South, Vic. 3128

The Kenwood TM-721A Dual Band FM Transceiver is a very accomplished radio. The case is no bigger than that of many single band FM transceivers of just 10 years ago. They could only manage 10 watts on one band. The TM-721A gives you 35 watts on 432 MHz and 45 watts on 144 MHz. Quite a step forward and with so many other features as well.

Power output was well up to the specification and was maintained over a reasonable range of standing wave ratio. This was observed by monitoring power output and SWR whilst using the radio with normal commercial aerials throughout both the 144 and 432 MHz bands. Power output was maintained throughout the band whilst the SWR varied.

One interesting accessory is a dual band aerial and duplexer which would be useful for mobile operation. The TM-721 has separate aerial inputs for each band which allows great flexibility.

Duplex operation is possible should this be desired as there are really two radios in the one box. Of course, the ability to monitor one band while operating on the other is a great convenience.

Both bands can be monitored and the audio from both can be mixed into the loudspeaker. The mix is continuously variable so you can always turn up or down either. Very useful for monitoring without upsetting the loudspeaker volume.

Naturally the full range of features we expect from a radio is provided with a few extra niceties. The beep tone which accompanies many of the push-buttons can be turned on or off. The tone of the beep is different for each push-button. Very handy when you are zooming along the highway.

The TM-721 is very well packaged and comes complete and ready to go on the air.

On air the deviation in the review model was on the low side. This could easily be corrected by adjusting the microphone gain control. This is a personal choice as it does depend on how loudly one speaks into the microphone. For mobile use, if you have it wound up too far, the road noise becomes obtrusive. So maybe the setting was a reasonable compromise.

I do have one small complaint and that is the use of series UHF RF connectors on both 144 MHz and 432 MHz. Surely in a radio of this quality Type N connectors could be used.

Internal construction of the transceiver is very clean. The use of Surface Mounting Components has contributed greatly in this regard together with the use of connectors on wiring looms. A big advance on the rats nest that used to be inside the lid.

On air the radio worked perfectly on both bands. I was pleased to have been able to make a contact through the repeater VK3RNE to VK2ACP at Wentworth Falls, New South Wales. Quite a reasonable distance from both stations to the repeater. The contact was of course aided by favourable tropospheric conditions. Other contacts on both 144 and 432 MHz bands were most satisfactory.

Well, that brings me to the bottom line . I can thoroughly recommend the TM-721 and it is now up to you and your bank manager whether you can drive one.

Thanks to Kenwood for supplying this review transceiver.

For further information about the Kenwood TM-721 contact Kenwood Electonics Australia Pty Ltd, 4E Woodcock Place, Lane Cove, NSW. 2066, phone (02) 428 1455 or your local Kenwood Dealer.

Kenwood TM-421A 70 cm UHF FM Transceiver

For those who need a small 70 cm FM transceiver the Kenwood TM421A is an excellent choice. Full features together with a conservative 35 watt power output are packaged in a very neat and small package. A very impressive radio indeed from Kenwood.

Panel Layout is very clean and uncluttered. This is even more impressive in view of the features and performance of the transceiver. Controls are of a reasonable size allowing easy and unambiguous operation.

For such a small physical size the output power is claimed as a most impressive 35 watts. On test the TM421A was able to provide 40 watts or more into the antenna cable. This was with a wattmeter which is very reliable and not given to generous outbursts.

The receiver is unfussed by strong local transmissions and appeared to be of quite adequate sensitivity.

Internal layout is also clean and uncluttered. Surface mounted devices are extensively used and the RF is amplified in a Module. Send receive changeover is by a diode switching arrangement which avoids clattering relays.

On the rear of the case is a substantial heat sink. This needs to be kept clear so as to allow for clear circulation of air. The heat sink gets quite warm in use and should not be blocked - something to consider when mounting the transceiver in your car.

My one complaint is the use of a series UHF RF connector for the antenna connector. For such an excellent transceiver a Type N connector is appropriate. Seems a great pity to mar such an excellent radio by fitting such a connector.

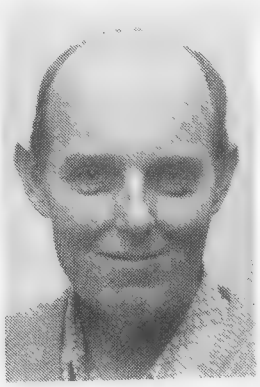
The packaging is of the usual high standard. Individual items are covered in plastic and fitted into a foam insert inside the outer cardboard box.

The instruction book is clear and includes both block and circuit diagrams.

Definitely a transceiver which can be recommended.

Thanks to Kenwood for supplying this review transceiver.

For further information about the Kenwood TM-721 contact Kenwood Electonics Australia Pty Ltd, 4E Woodcock Place, Lane Cove, NSW. 2066, phone (02) 428 1455 or your local Kenwood Dealer.



ABOUT THE REVIEWER

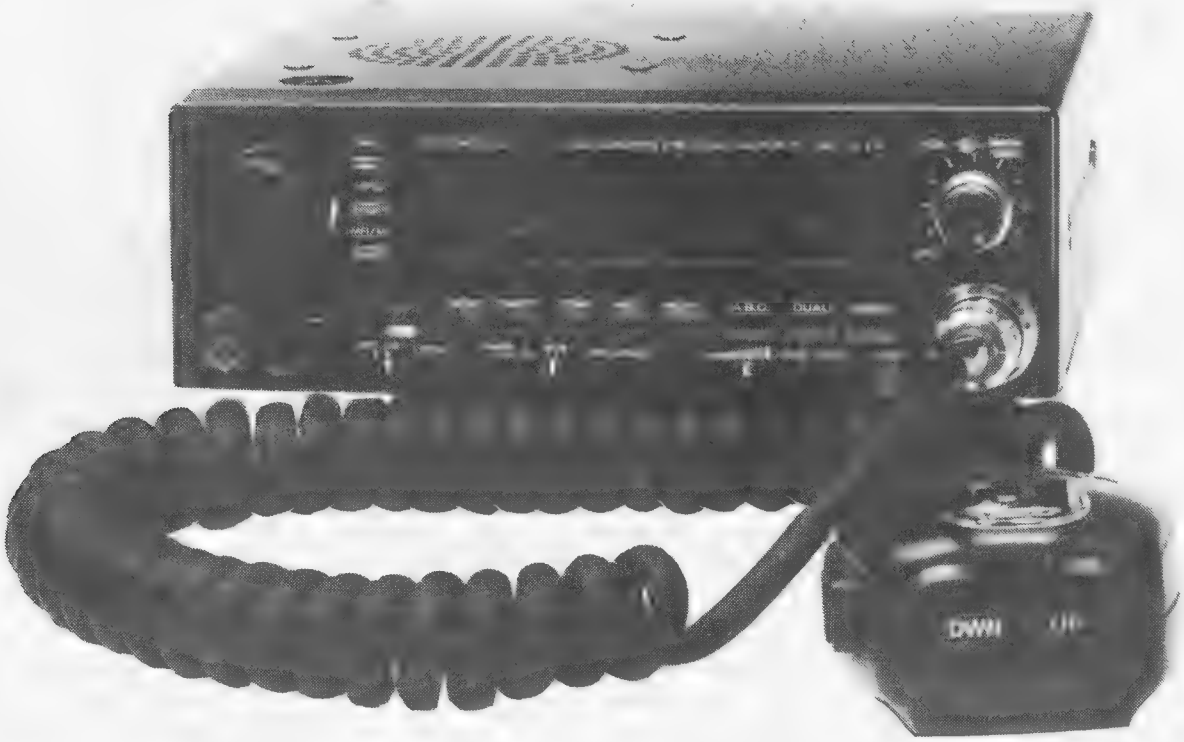
Gil Sones VK3AUI, was first licensed as VK3ZGS, in 1963, and upgraded to VK3AUI in 1969.

Gil is employed by the State Electricity Commission of Victoria as a an Engineer in the telecommunications field.

Amateur radio interests are principally in the VHF/UHF area and he is a keen 6 metre operator. Over past years Gil has been a driving force in the provision of a beacon keyer and equipment to activate Macquarie Island, Heard Island and Willis Island on 6 metres.

Gil has been involved in the production of *Amateur Radio* magazine for many years, a valued and hardworking member of the Publications Committee and a past Editor of the magazine.

Other interests are travel, cycling, bird watching, hot-air ballooning and generally enjoying life.


DWN
UP

KENWOOD
LOW
POWER
DWN
UP

Equipment Review

ICOM IC-228H

Ron Cook VK3AFW

Another two metre unit?

Yes, this is another two metre FM unit but with some differences. It is compact, full of features, high powered and, going against the recent trend, has a simple front panel.

Weighing a mere 1.1 kilogram, it is 140 mm (W) x 50 mm (H) x 169 mm (D). This is smaller than most 10 watt units were a few years ago yet it delivers a husky 45 watts to punch through the noise.

The large amber coloured display takes up almost one third of the front panel yet the frequency tuning knob is still a sensible size as are the eight main push-button controls, this making it a unit suited for both mobile and fixed station installations.

FACILITIES

The transceiver is equipped with 20 memory channels and a call channel. Each memory can retain either a simplex frequency or a repeater frequency and it's offset. These memories can be scanned and one or more can be set to be skipped over during scanning if desired. Alternatively, a segment of the band can be scanned without altering the memories. When the priority watch function is evoked, the receiver checks the priority channel every five seconds. If a signal is detected on this channel then the function display flashes for 15 seconds at which time the receiver reverts to listening in the previous mode, checking the priority channel again every five seconds.

Each time a control is touched the set emits a beep. This tells the operator that a button has been activated, useful when mobile as you can keep your eyes on the road. This facility can of course be turned off.

The main tuning knob functions either as a VFO tuning control or as a memory channel selector, the function being selected by a push button placed above the knob. An additional feature is the provision of a call channel, separate from the priority channel, for your most often used frequency. This is selected by a button near the main tuning control. Separate LEDs are provided to indicate receive or transmit operation. Writing data to the memories is controlled by a push button as is the dial lock facility.

Rapid frequency changes can be achieved by selecting a 1 MHz step for the VFO. A low power (five watts) mode is available. This can be adjusted if the case is removed to give say 10 watts if desired.

The input frequency of a repeater can be checked by pressing the Monitor switch which is connected to the squelch level potentiometer. The microphone is fitted with buttons to allow the operator to change the VFO frequency or memory channel without touching the front panel. A 16 button keypad is available on the rear of the microphone for audio tone selection (DTMF) if the appropriate option is fitted. Programmed subaudible tones can also be used with the appropriate option. Frequency steps of 5, 10, 15, 20, 25 kHz may be selected.

INSTALLATION

A DC power supply capable of supplying 13.8 volts (± 15 percent) at up to 9.5 amps is required. On receive a maximum of 0.8 amps is used at full audio output and 0.45 amps on standby. Good ventilation is recommended. Both power and antenna connections are made to connectors on short leads protruding from the rear of the set. An external eight ohm speaker can be plugged in if required. An antenna with a low VSWR is necessary for good results.

ON AIR

The set was easy to use, no doubt a combination of a clearly set out easy-to-read manual and logical function design. The Function Display clearly showed the operating frequency with six big digits, duplex ± when selected and signal strength on a wedge shaped graphical 'S-meter' with seven divisions and markings of 1, 5 and 9. This same display also indicated output power level. When low power was selected this was also indicated on the display. Selection of the Priority Watch and 1 MHz step functions also brought up indications on the display. Operation of the memory mode was also indicated along with the memory channel selected and whether it was programmed as a skip channel. The memory channel number is replaced by the letter "C" when the call channel is selected. Repeater offset, beep status, dimmer level band scan edges, tuning steps and subaudible tone frequency (if installed) can all be viewed on the display.

Received audio from the inbuilt speaker was good but to get the full benefit of the 2.4 watts output and best audio quality an external speaker is necessary, as in all units of this type. All controls operated smoothly and positively.

Although no accurate measurements were made, the set appeared to deliver in excess of 45 watts right across the band and was quite sensitive. Selectivity seemed to be as good as claimed and no unwanted responses were detected. Excellent reports were received.

TECHNICAL DETAILS

The frequency, mode and memory operations are all controlled by a single chip microprocessor. The phase-locked-loop (PLL) is also essentially only one IC. The reference frequency is 12.8 MHz.

An integrated block IC power module is used to provide the final power amplification and feeds the antenna via a diode switch and a lowpass filter. Automatic power reduction circuitry provides protection against a less than perfect antenna match. (Any VSWR above 1.5:1 should be avoided and low power used if the VSWR is greater. A VSWR of 2:1 or more is excessive). Frequency stability is claimed to be ± 10 ppm for temperatures in the range minus 10 to plus 60 degrees Celsius. This should cover most shacks!

Frequency deviation is set at ± 5 KHz nominal.

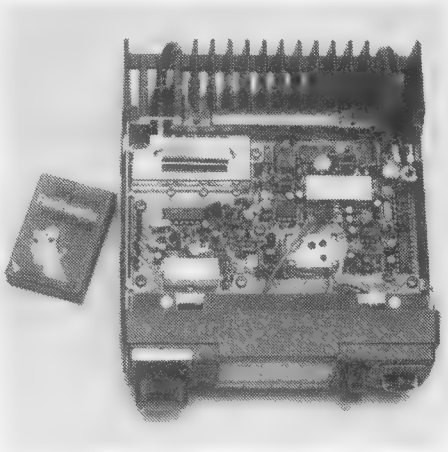
The receiver uses a 3SK174 FET RF amplifier which is protected from out of band signals by a bandpass filter. It uses double conversion, the first IF being 17.2 MHz and the second 455 kHz. Sensitivity is stated as 0.18 μV for 12 dB SINAD. Selectivity is stated to be 15 kHz at minus 6 dB and 30 kHz at minus 60 dB.

SUMMARY

This is a snappy little unit with a big signal which should fit into even today's cars. It combines first class performance, Icom quality, ease of operation and almost every feature required in a modern mobile FM transceiver.

ACKNOWLEDGMENT

The Icom IC-228H was kindly made available by Icom Australia, 7 Duke Street, Windsor, Vic. 3181, to whom inquiries should be directed.



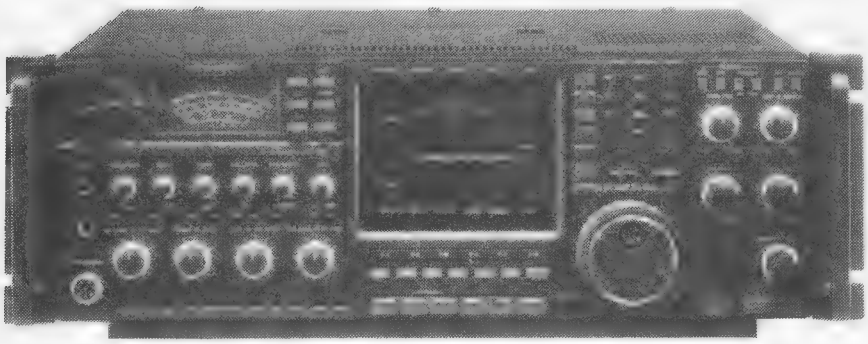
A top view of the IC-228H, with the cover removed, not only shows the compact size of the unit, but also indicates the relative size of the very adequate heatsink.

—Photograph courtesy Barrie Bunning

Equipment Review

ICOM IC-781

Ron Cook VK3AFW
and
Bill Roper VK3ARZ



This is not a cheap transceiver! It is Icom's pacesetter with many features others will want to copy. It seems to be the ultimate home station for the HF operator; it has everything in one box — AM, SSB, CW, RTTY, AMTOR and Packet (with external TU) for all amateur bands from 1.8 to 30 MHz and a general coverage receiver tuning 0.1 to 30 MHz.

You can see the signal in the band up to 100 kHz away from your operating frequency on the inbuilt spectrum display, and you can listen to two frequencies at once. When you change bands the inbuilt ATU almost instantly retunes to a preset frequency and antenna combination.

Add to this an output power of 150 watts, a dynamic range of 105 dB, a most extensive display capability, and many, many other features and the reason for Icom's excitement about this transceiver become apparent.

FACILITIES

The most obvious and unusual feature of this luxury transceiver is the 125 mm (5 inch) CRT Multi-function Display in the middle of the front panel. It displays the frequencies of the dual VFOs to 10 Hz, the status of many of the controls, the contents of the memory, two menu screens, 17 operational screens, and can show in sharp, amber display 94 symbols, including letters, numbers and punctuation marks. Because of the vast range of items displayed by the screen further comment is made later.

The bottom half of the screen can be used to display the RF spectrum 25, 50 or 100 kHz either side of the VFO frequency. The relative strength and individual spectrum of each signal present can be instantly viewed. The screen also acts as a terminal monitor when an external terminal unit for RTTY, Packet or AMTOR is used.

There are 99 memory channels, two scan edge frequencies, and the ability to attach notes up to 10 characters long to each channel are provided. Five daily timers can be set to turn the set on and off this allowing you to record (via the recorder remote plug) your favourite program whilst away from the shack.

Two clocks, useful for setting at local time and UTC, are provided.

As mentioned earlier, there is an inbuilt ATU which automatically tunes for a low SWR and goes to a preset tune condition when you change bands.

A new direct digital synthesis frequency generator allows very rapid shift from receive to transmit frequencies and is well suited to Packet, etc. Full or semi-break-in operation is provided.

Two PLL circuits are included to allow tuning of the band whilst monitoring that rare DX station on another frequency in the same band. This is known as the ***Dual Watch*** facility. A fine scan mode allows slow tuning without stopping which is useful for monitoring of CW and SSB signals.

Passband tuning is yet to appear on all rigs: this set has dual passband tuning for use in tandem on the second IF of 9 MHz and the third IF of 455 kHz. This should be a boon to the contester.

The output power is greater than any other solid-state transceiver on the market today — 150 watts. The power supply and heat-sinking are designed for 100 percent duty cycle operation. The 105 dB dynamic range is exceptional.

The noise blanking system allows control of blanking threshold and blanking interval to eliminate ignition and other sharp impulse noise or longer pulses from the woodpecker or even key clicks of nearby CW signals.

A nice feature is the band stacking register which gives the operator the ability to store a frequency, change bands and tune to check propagation and then return to the original operating frequency without using the second VFO.

A calculator-like keyboard allows entry of frequencies to 10 Hz, to select any amateur band directly, and to call up any of the 99 memories. A marker oscillator is provided and is most useful when used in conjunction with the spectrum display.

Nine filters are provided and can be cascaded to give superior selectivity for CW and RTTY. Wide and narrow filters can be independently selected for SSB. To eliminate annoying heterodynes an IF notch filter is available.

The CW audio pitch can be altered without altering the operating frequency. Separate receiver and transmitter incremental tuning is provided with the offsets being shown on the screen. An audio peak filter improves CW reception and an electronic iambic keyer operating up to 60 WPM is built-in for the keen CW operator.

A preamplifier can be switched in to increase sensitivity on quiet bands and up to 30 dB attenuation, in 10 dB steps, can be switched in. A continuously variable RF gain control is also provided.

In addition to the usual volume control, separate treble and bass tone controls are provided to tailor the audio response to your requirements.

A meter of sensible proportions monitors power output, SWR, ALC, compression level, Ic and Vc.

VOX operation is catered for, as is full or semi break-in CW. As befits a transceiver of this quality, provision is made to monitor the transmitted signal regardless of mode.

The dial knob allows tuning in either 10 Hz steps and 5 kHz per revolution, or 1 kHz steps and 500 kHz per rotation. In the 10 Hz per step mode rapidly turning the knob gives 10 kHz per revolution. An optional speech synthesiser is available to announce the selected frequency.

Of course, there is an RS232 port for communication with a computer if required.

TECHNICAL MATTERS

There are a number of different technical features in this transceiver. The first impression gained from looking at the circuit diagram is the vast amount of digital circuitry associated with the monitoring, display, frequency and general control functions. In fact, RF amplifiers, mixers, tuned circuits, etc, make up less than 50 percent of the circuit.

The signal to be received can be selected to pass from the antenna socket directly to the receiver or via the antenna tuning unit. A local oscillator rejection filter and switched attenuators come next, followed by one of the 11 bandpass filters. A 1.6 MHz highpass filter is added for all frequencies above 1.6 MHz.

New in amateur transceivers, is the use of PIN diodes as variable attenuators even though they have been in use for over 20 years in military and commercial equipment. In this unit, they are used to provide AGC control by adjusting the input signal after the filters and before the RF amplifier or mixer.

The RF amplifier uses two FETs in push-pull and can be switched in when the band is quiet and signals are weak.

Balanced mixers are used to obtain the 105 dB dynamic range quoted. There are two receive mixers, one for the main signal and the second for the Dual Watch frequency. The relative level of these signals is adjusted via PIN diodes on the output of the mixers. The first IF frequency is 46.5 MHz and there are two filters on this frequency in the receive mode.

Conversion is made to the second IF of 9 MHz without further amplification. For FM reception, the signal is amplified, limited and converted to 455 kHz for further filtering and demodulation. For the other modes there is some amplification first, followed by pre-filtering, the noise gate and

then a selection of any one of four filters, or a bypass position for wide band reception. Conversion to the third IF of 455 kHz then occurs and again one of four filters can be used. The signal is then converted to the fourth IF frequency of 10.7 MHz where the notch filter operates. After amplification, either a product detector or a diode detector is used for SSB/CW or AM demodulation respectively.

The noise blanker has the facility of providing a variable width blanking period thus increasing its effectiveness against the "woodpeckers".

There are two bandpass tuning controls which operate independently, one on 455 kHz and the other on 9 MHz. This facility, combined with the cascade filters, notch and audio peaking filter, gives unsurpassed QRM reducing ability.

The transmitted signal is generated initially at 455 kHz and is heterodyned to 9 MHz, then to 46.5 MHz, and finally to the signal frequency before amplification to the 150 watt level. Seven filters precede the SWR detector and the signal then passes through one of these directly to the antenna connector or via the automatic tuner.

The tuner can be preset to a favourite frequency in each band for the appropriate antenna so that, when you change bands, the antenna is matched virtually instantly without even putting a signal out.

The spectrum display takes the signal at 46.5 MHz immediately after the first mixer and converts it, firstly to 4.7 MHz, and then to 390 kHz where it is amplified, rectified by a logarithmic detector and converted to a digital signal by an analogue to digital converter. This is necessary as all video signals are controlled by a microprocessor system very much like the video generating systems used in some computers.

Such complexity would not be warranted for analogue signals alone, but the data terminal, message display and frequency display functions all demand a digital approach.

THE MULTI-FUNCTION DISPLAY

The range and quantity of information given on the display is incredible. Apart from the operating frequency mode, filter (wide/narrow), transmitter and receiver RIT offsets, selected memory channel frequency, mode, etc, in the top half of the screen, the bottom half shows either the spectrum display, memory information, scan data, or clocks and timer.

Each of these alternative screens have their own menus (in the computer program sense), enabling the operator to review the set parameters and to change them as described. For example, both UTC and local times can be set and the station's call sign can be displayed. Notes of up to 10 characters can be added to each memory for recall later when the memory list function is operated.

In addition, the bottom half of the screen can be used to monitor ASCII data from an external terminal. Checking and altering the data format is done using the screen and a menu.

Some 20 pages of the handbook are devoted to screen related operations and, as this relies heavily upon diagrams, no attempt will be made to give further details here. There is so much more that can be done with a 125 mm (5 inch) CRT screen as compared to even the best of the LCD panel displays that any attempt to describe it all would only fall short. It can only be a matter of time before the flagship transceivers of the rival manufacturers also boast a CRT multi-function display.

ON AIR

It should be stated at the outset that this is a most complex piece of electronics and, even though the handbook is extensive and well written, more then one afternoon is required to learn how to use all the facilities built into the transceiver.

In fact, it may take quite some time to become completely familiar with all of the facilities offered.

It is quite imposing to sit down in front of such a large transceiver with a total of 106 front panel controls. However, the controls are relatively large and easy to operate, and there does not seem to be overcrowding. The tuning knob is smooth to operate and there is an adjustable brake to set the feel to your own touch.

The VDU display is fascinating and, if you become addicted to all the facilities, you may not get to the stage of actually transmitting for quite some time. This happened to the reviewers!

The receive facilities far surpassed those of any other amateur equipment used, particularly in sorting out weak signals through heavy QRM. Even the bass and treble tone controls were found to be quite useful, and we wonder why other transceivers do not include this feature.

Reports on the quality of the transmitted audio, and the effectiveness of the speech processing, were well above average. The heavy duty power supply and 100 percent duty cycle final amplifier enabled high level processing to be used continuously.

After about a two minute warm-up, the VFO stability was well within the specifications of 15 Hz. The IF notch filter was very effective, without introducing any colouration of the received signal's audio, but seemed to drift slightly in the first two seconds after switch-on.

CONCLUSION

This must be, without any doubt, the most spectacular and sophisticated amateur transceiver manufactured to date. If money is no limit, and you want the best, then this is the transceiver for you. It will provide virtually any feature that you are likely to require in an amateur transceiver well into the foreseeable future, and may well be the standard against which other transceivers will be measured for a long time to come.

There were only two mildly disappointing aspects about the transceiver. Firstly, the engraved band markings on the keyboard keys were difficult to read. The alternative numeric functions were illuminated and easy to read. Infilling the engravings with bright white paint would help.

Secondly, although the unit is capable of displaying characters from a remote terminal, and has selectable shifts for RTTY, it requires an external terminal unit incorporating a mod/demod system. Considering the complexity of the system the company could have offered an option for RTTY (at least) requiring only a standard computer keyboard to be plugged in (the keyboard could be another option). One day these features will be available. What a pity we can't see them now!

The review transceiver was generously provided by the Australian importers, Icom Australia. They can be contacted at 7 Duke Street, Windsor, Vic.

MYSTERY SATELLITE OVER QUEENSLAND

A previously unknown satellite has been discovered by Andrew Chantler VK4TAA, who monitored it while transmitting aerial photographs of Queensland.

The Gold Coast Amateur Radio Club Vice-President said, listening to the satellite bands was an extension of his interest in amateur satellites. Andrew said checks have been unable to immediately identify the satellite monitored on about 136 MHz.

His discovery has attracted the interest of the Defence Department.

He said: "The satellite had taken high resolution pictures of Stradbroke Island and the Moreton Bay area."

Andrew told *Amateur Radio* magazine he was also monitoring transmissions in the GigaHertz part of the spectrum and feels other radio amateurs may be doing the same. He said he would like to share information about satellite listening with those also tuning into those transmissions.

Andrew Chantler VK4TAA, in his Gold Coast shack tuning the higher bands for satellite signals and other mysterious transmissions.

OPERATION GUIDE OF FUJI-OSCAR 12

As at April 1988

Unfortunately, the following information was not received in time to accompany the information published on page 49, June AR.

Present transponder operation is as follows:

1. There are three modes of operation:

mode JA — for analog QSO (SSB phone, CW).

mode JD — for digital (packet) communication.

mode DI — digital system working except transmitter.

Generally, analog mode JA and digital mode JD work alternately every 10 days or two weeks.

2. In a JA week, except off days, beacon CW telemetry signals can be heard on the beacon channel, when communication is possible.

3. In a JD week it will open in as follows:

JTD-ON: At the beginning of JD period, station JJ1ZUT (satellite control station) uploads the necessary programs for satellite operation, and JD starts to work at the conclusion of program uploading, when JTD, the transmitter of JD system, becomes possible to transmit downlink signal. During this period, if FO-12 receives any valid uplink signal, JTD will continue to work for mailbox, and it will be turned off three minutes after the last access. If there is no accessing uplink and JTD does not work, downlink PSK stream will be transmitted for five seconds every minute, showing JD to be available. JTD-ON continues for two hours.

JTD-OFF: This follows after JTD-ON and no downlink signal is received for two hours. JTD-ON/OFF repeats cyclically every two hours.

DI: CPU and memory of the digital system work but JTD does not operate. This is to charge the battery during JD period, not to lose posted messages by turning off the whole system.

* Time counting of two hours begins at the conclusion of the program uploading, but this does not generally coincide precisely. Because the satellite has no permanent clock, it is necessary to set the time for CPU every uploading. Therefore the satellite time should be calibrated by comparing it with the correct one at a receiving site. The finishing time of uploading will be shown in the beacon of FO-12.

The operating schedule of FO-12 was shown on page 49, last month.

Mailbox Version 1.11

1. Setting of the TNC

* The TNC should be for the AX-25 Version 2. Version 1 does not connect to JAS-1 (8J1JAS).
* FRACK, waiting timer for ACK (acknowledging signal from the satellite), should be over six. Other setting of time constants are similar to packet link on the ground. Because the mailbox responds to multiple access, processing time may increase, therefore, it may become necessary to increase FRACK more than six.
* MAXFRAMES, the number of packets that can be sent at one time is up to seven. It is better for MAXFRAMES to set to less than three.
* PACLEN, the number of bytes of data in one packet, should be less than 200 bytes.

FO-12 transmits with PACLEN = 128 and MAXFRAMES = 1.

2. Digipeating

The mailbox has no digipeating function, and does not accept any frames as a digipeater.

3. Users commands available

B	displays all file names of the bulletin addressed to all, back from the latest one.
F	displays the latest 15 files.
F*	displays the latest 50 files.
F<d>	displays files pasted in the day <d>.
H	explains available commands and functions.
F<#>	kills mail defined as <#>, a file number, only by writer or addressee. It is not executed while someone is reading.
M	displays all files addressed to the user.
R<#>	displays contents of message defined as <#>.
U	displays call sign and SSID of all stations that have been accessing to FO-12/8J1JAS.
W	writes message to FO-12, responding to the sent prompt. For termination of the text, use <RET>.<RET> or <RET>∧<RET>.

* Letters of both upper and lower case are available. Letter code for packet is ASCII.
* Disconnect by command through the TNC.

Further information may be obtained by writing to: Technical Laboratory, JARL, 1-14-2 Sugamo, Toshima-ku, Tokyo, 170, Japan.

Coaxial Cable Specials

Low Loss VHF/UHF Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	pF/m	Nominal Attenuation MHz	db/100 ft.	db/100 m
	9913 80C	9½ (Solid) .108 bare copper .90Ω/M' 2.95Ω/km	Semi-solid Poly-ethylene .285	7.24	Duobond II* + 88% tinned copper braid 1.8 Ω/M' 6.0Ω/km 100% shield coverage	50	84%	24	78.7	50	0.9	3.0
										100	1.4	4.6
										200	1.8	5.9
					Black PVC jacket.					400	2.6	8.5
										700	3.6	11.8
										900	4.2	13.8
										1000	4.5	14.8
										4000	11.0	36.1

BELDEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG8 to RG213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same outside diameter as RG8, it has substantially lower loss, therefore providing a low cost alternative to hard line coaxial cable. Price per metre from Acme Electronics is only $5.10.

BELDEN Broadcast Cable 8267 — RG213 to MIL-C-17D is only $5.24 per metre while BELDEN Commercial Version RG213 — YR22385 is $2.25 per metre. Prices do not include Sales Tax.

Also available from Dick Smith Electronics.

Coaxial Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	pF/m	Nominal Attenuation MHz	db/100 ft.	db/100 m
RG-213/U MIL-C-17D	**8267**† UL 1354 60C	13 (7x21) .089 bare copper 1.87Ω/M' 6.1Ω/km	Poly-ethylene .285	7.24	Bare copper 1.2Ω/M' 3.9Ω/km 97% shield coverage	50	66%	30.8	101.0	50	1.6	5.2
										100	2.2	7.2
										200	3.2	10.5
					Black non-contaminating PVC jacket.					400	4.7	15.4
										700	6.9	22.6
										900	8.0	26.3
										1000	8.9	29.2
										4000	21.5	70.5

ACME

ACME Electronics

205 Middleborough Rd, Box Hill. Vic. 3128.
Ph: (03) 890 0900. Fax: (03) 899 0819

SYDNEY (02) 649 2533
ADELAIDE: (08) 211 8499
BRISBANE: (07) 854 1911
LAUNCESTON: (003) 31 5545
DARWIN: (089) 81 5411
PERTH: (09) 272 7122
HOBART: (002) 34 2811

ACME 70B

VHF UHF — an expanding world

Eric Jamieson VK5LP
8 West Terrace, Meningie, SA. 5264

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.005	H44HIR	*Honiara*
50.005	ZS2SIX	*South Africa*
50.011	JA2IGY	*Mie*
50 020	JE6ZIH	*Japan* [1]
50.075	VS6SIX	*Hong Kong*
50.080	KH6JJK	*Hawaii* [2]
51.020	ZL1UHF	*Auckland*
52.013	P29BPL	*Port Moresby*
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.320	VK6RTT	*Wickham*
52 325	VK2RHV	*Newcastle*
52.330	VK3RGG	*Geelong*
52 345	VK4ABP	*Longreach*
52.350	VK6RTU	*Kalgoorlie*
52.370	VK7RST	*Hobart*
52 420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.432	VK0MA	*Mawson*
52.435	VK3RMV	*Hamilton*
52.440	VK4RTL	*Townsville*
52.445	VK4RIK	*Cairns*
52.450	VK5VF	*Mount Lofty*
52 460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52 470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
52.510	ZL2MHF	*Mount Climie*
144.022	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley* [3]
144.445	VK4RIK	*Cairns*
144.445	VK4RTL	*Townsville*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144.480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
144.950	VK3RCW	*Melbourne*
145.000	VK6RPH	*Perth*
432.066	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK1RBC	*Canberra*
432.420	VK2RSY	*Sydney*
432.440	VK4RSD	*Brisbane* [4]
432.445	VK4RIK	*Cairns*
432.445	VK4RTL	*Townsville*
432.450	VK3RAI	*Macleod*
432.540	VK4RAR	*Rockhampton*
1296.198	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.440	VK4RSD	*Brisbane* [5]
1296.445	VK4RIK	*Cairns*
1296.480	VK6RPR	*Nedlands*
2304.445	VK4RIK	*Cairns* [6]
2306.440	VK4RSD	*Brisbane* [7]
10445.000	VK4RIK	*Cairns*

1 Phillip FK1TS advises the JE6ZIH beacon is operating consistently on 50.020 MHz, so, for the time being, it has been included in the beacon list.

2 I am informed this beacon is operational with five watts to a three element Yagi pointing on VK at the moment. (Thanks VK5ACY for this).

3 Charlie VK3BRZ, has written in response to my plea in the May issue, to confirm VK3RTG is operational, but it appears to have a vertically polarised antenna. Charlie wonders why this should be, in view of the large loss when received on horizontal antennas and that it may be changed with relative ease. Yes — why?

4 The call sign has been changed from VK4RBB to VK4RSD.

5}
6} These are three beacons which, for the first time, have been advised as operating. John Aarsse VK4QA, sent me a very comprehensive list of all the beacons, repeaters and packet radios in Queensland and this has allowed an up date to be made.
7}

Wally VK5VU, telephoned recently to say the WA beacon, VK6RVF, on 10.300 GHz is no longer operating and has been off the air for four or five years! This seems to indicate no one, in WA, at least, ever looks at the end of the beacon list. This particular beacon was originally constructed by Colin VK6CM, of the WA VHF Group. Thanks for the message Wally. At least the present status is known.

After struggling for months to obtain the information, the present beacon list is almost complete. The only beacons about which I lack information are VK6RTU at Kalgoorlie on 52.350 and VK6RPB at Port Hedland on 144.565 MHz. Even lacking definite information on these two beacons, the present list should now be the most accurate list available and should be included in the 1988/89 Call Book and noted by FTAC.

SIX METRES

From the Japanese *Ham Radio* magazine for April (courtesy Graham VK6RO), it is noted that, during February 1988, a number of contacts were being made, mostly on 50.110 MHz or thereabouts, to northern VK4 stations (VK4s FXX, FNQ, KAL, JH, ALM, FXZ, FUF, GB) and to VK8s ZLX, ZMA and VK6KOJ. The JA stations were also working KG6DX in Guam, VS6XRC Hong Kong and P29PL, in New Guinea.

A most interesting observation from the considerable list presented was the number of times ZL television, Channel 1, was observed, almost on a daily basis throughout February. Channel 0 from Queensland, and New South Wales, were also regulars with sound and vision carriers at times.

The fact that all these observations are being reported points to a dedicated band of enthusiasts, at least in Japan, always ready for contacts. There are so many Japanese six metre stations that relatively few can work VK or other stations when the band opens, so there are always stations hungry for contacts. This can only mean more contacts throughout the Pacific area as more stations become alerted to the possibilities of six metre contacts at any time of the year and period of the Cycle. The latest predictions for Cycle 22, which are mentioned later in these columns look very encouraging.

NOUMEA

Phillip FK1TS, has written again and refers to hearing FM stations with American accents on 50.100 MHz, between 20/3 and 7/4. They were using call signs consisting of either one letter and two figures or two letters and one figure, eg BI2 or C36, a typical exchange being: "C22 this is BI2 in the plane" or "D36 this is C22 do you copy?". Phillip believes these stations are probably US military but from where is not know. Due to FM being used and the strength of the signals, whenever they operated on 50.100, they obliterated 50.110 as well which Phillip found most annoying.

Reports received here at Meningie suggest there are other areas in the Pacific where six metres is used for military purposes/police purposes. Noumea happens to be one!

Phillip FK1TS, in his letter, also mentions the local radio club has a IC-202 and considers it might be used to advantage to provide a two metre beacon from there. The 1550 kilometre path from Brisbane to Noumea should not be too difficult given some enhancement to propagation conditions. I am sure Gordon VK2ZAB, would never consider the 2000 kilometre path too difficult to conquer, being about the same as Adelaide to Albany, but without the benefit of coastal ducting.

Phillip will keep me informed on the progress being made and whether it will be possible for future plans leading to a 70 centimetre beacon being installed, becoming a reality.

Finally, Phillip mentioned a news item in *Television* for February 1988, that confirms an original statement that, from April 1988, Dutch amateurs will be able to use the 50 to 54 MHz band running CW at up to 30 watts output. The Ascension Islands has also been given this allocation, with powers up to 50 watts.

NORWAY-AUSTRALIA 50 MHZ OPENING?

Jim Linton VK3PC, brought to my attention a report of hearing of the Perth six metre beacon by a station in Norway contained in *Radio Communication* for April 1988. Before making any comment I will quote the relevant information:

"At about 0900 GMT on February 21, 1988, LA6QBA and LA4LN both heard the Perth beacon, VK6RTV, on 52.300 MHz. Signals were apparently quite strong and lasted for a considerable time. Before this, Frans LA6QBA, had heard the Cyprus beacon 5B4CI for about an hour. To our knowledge this is the first time that anyone's reported an opening like this, and we asked propagation wizard Charlie Newton G2FXZ, for his thoughts about it and whether it could possibly have been connected with the aurora which took place the following day.

"G2FKZ says: The time was correct for an opening to Perth and the normal predictions show this for 28 MHz, so we only needed a bit more F2 ionisation to get the 50 MHz signals through. The most ionospheric concentration would be around the Magnetic Equator where the ring current would be the greatest. The path from LA to VK6 crosses the magnetic equator near Colombo/Southern India where the time was 1500 and we would expect quite high F2 levels anyway at that time. So if we can squeeze the ionosphere a bit, and the effects are not local but would be spread well either side of Colombo, we could well have had a dense ionised patch at the critical part of the path. If the 50 MHz signal from Perth could have got into that patch, then it could have been deflected to virtually a grazing angle incidence at the F2 layer, which was at or very nearly at its best for the time along the path. So it could, under these conditions carry the signal.

"Of course, we had an ionosphere that was very rapidly climbing to high F2 levels at the time in question; this together with the fact that the path from LA was rapidly going into areas of much higher ionospheric intensity, ie higher F2 critical frequencies. Then running into the denser Dst patch, to my mind, its all possible.

"To add to the story, between 0905 and 1000 on February 21, I understand that G3JVL heard 28 MHz, beacons in Z21ANB, ZS5VHF, ZS6PY, VK6RG, 5B4CY and numerous UA4, UA6, UM8

stations and the rarely heard 5Z4ERR. Also, top band was wide open to the States from 0100 until 1000 before the aurora on 22/2. I am not sure of the time but the Greenland beacon, OX3VHF, was heard by GW3LDH after the main aurora was over, and by Scottish stations when the aurora was on. That is the real interesting one — how does it happen?

"In terms of the aurora, it was a classic example of auroral HF band enhancement, it is just that this time it went to 50 MHz and a bit further than usual."

Okay. So much for all that! But there are a few things which do not tie in. Firstly, the last time I reported VK6RTV as operating from Perth on 52.300 MHz was in October 1984 AR. In November 1984 issue, I reported Bruce VK6CX, has advised the VK6RPH beacon frequency had been changed to 52.460 MHz where it has operated since. No beacon in Australia operates on 52.300 MHz and certainly not from VK6!

Unless this happens to be another one of those reports of reception of "long-delayed signals" which surface from time to time, I can only say the operators in question were sadly confused and/or need to improve their CW reading capability. The report said "the signals were apparently quite strong and lasted for a considerable time." If this was so, then correct identification should have been no problem. If there was any doubt, why were the signals not taped for others to hear?

Without being too unkind I can only say the operators probably heard a signal on 52.300 MHz. which they could not identify adequately and, by consulting a list of beacons, found VK6RTV in Perth on 52.300 MHz, and assumed this was the station. Unfortunately for them, they are about three years too late to make that claim accurate! I note also that the 1984/1985 Australian Call Book lists VK6RTV as being on 52.300, in the 1985/1986 issue, the listing is VK6RPH on 52.300 and the same in 1986/1987. Both wrong!

Before writing this, I telephoned the President of the West Australian VHF Group, Phil VK6AD, to receive confirmation that VK6RPH was operational and on 52.460 MHz. Sorry folks, I might be an old "skeptic" but I have not been around for most than 30 years without learning a thing or two, and I also have a fairly good memory when it comes to beacons — particularly as they are one of my pet hobby-horses! So — all concerned, more information please — or do we put it down to another hoax? May thanks to Jim VK3PC, for bringing such a matter to my attention.

SOUTH AFRICA

Hal Lund ZS6WB, has sent two further issues of *VHF News* one of which is a 50 MHz DX Special, in which he reports of an excellent six metre opening on 9/3 resulting in the Malta 9H1SIX and Cyprus 5B4CY beacons being heard by ZS6XJ and ZS6XL, at 1500 UTC following which there was a gathering of the clan on 50.110 MHz. By 1630, 5B4YC on 50.498 was S9 + in Pretoria. A report was received on 28.885 MHz from F5GZ, in Cannes, that the South Africans were being heard there as S7. Around 1730 UTC, contact was made between ZS6WB, ZS6XJ and ZS6XL to 9H1BT on SSB before the band closed a short time after.

On 12/3, during the afternoon, 5B4CY appeared again and, after making calls on 50.110, Costas SZ2DH, in Athens, Greece, appeared and worked ZS6WB, ZS6BMS and ZS6ADH, although the contacts were made difficult due to a large amount of traffic on the frequency. ZS6CE moved up a few kHz and received a report that he was being heard in France.

On 14/3, 9H1SIX and CT0WW beacons were heard around 1800 with good signals. 9H1BT was heard on CW and called but did not return. The same beacons were heard again on March 21 and 24.

Mike ZD8MB has applied for permission to operate six and 10 metre beacons on Saint Helena, as well as Ascension Island. The Saint Helena beacons would be looked after by ZD7CW, whilst the ZD8VHF Ascension Island beacon is ready for operation on 50.0325 MHz, but has so far not been installed. Permission is also being sought to run a beacon on Gough Island and talks are proceeding with Andy ZD9BV.

Although I have nothing definite on frequencies other than to say they are between 50.000 and 50.100 MHz, but the South African VHF News does report beacons have been heard signing FY7THF, HC2FG, PY2AA and with ZD8MB also working HC1BI, PY8TH, FM3BY and FM5CS, but missing out on PY0VO and HC2FG. It is quite possible we in Australia do not pay enough attention to the big continent to our west and the islands between us! Stations in VK6 should be monitoring 50 MHz with their beams west, particularly around the equinoxial periods and certainly as we approach the peak of Cycle 22. At the same time perhaps the South African stations should also look east instead of always to the north, again around the same periods!

A LINK WITH THE PAST

I received a very interesting letter from Maurie Phillips VK5ZU, which reads:

"Enclosed is a copy of a letter I received 50 years ago which may be of interest. At the time, 10 metres was alive with DX and there was quite a lot of local activity on five metres.

"On Sunday, March 13, 1938, Bob Manuel VK5RT, phoned and told me that ZL3JA had heard signals from USA on 56 MHz, so I went on 56.460 MHz CW sending "56 Mc Test CQ ZL DX" but heard nothing.

"My transmitter consisted of a 6A6 crystal oscillator on 7 MHz doubling to 14 MHz, 6LG6 doubling to 28 MHz and 807 doubling into the antenna with about 25 watts DC input. The receiver was the so-called resistance coupled superhet described by VK3VH in *Amateur Radio* for July 1936."

The letter subsequently received by Maurie was on NZART letterhead from W R Hamilton ZL4DQ and reads:

"I heard your five metre signals here this evening March 13, 1938, at 6.03 pm NZ time. They were RST 458 at best but QSB was very bad and they disappeared at short intervals. You called CQ Test 56 Mc ZL and DX. I gave you a call but did not hear you again.

"The receiver here is a seven tube S S Super, link coupled to a tuned antenna which is also used for transmission. The transmitter is a C C 100TH and boy! was that plate hot while I was calling you. I was calling on five metres most of the day as 10 metres was really good and I thought you chaps would be on the job. Yesterday I worked 24 Ws on 10 metres in two hours between 2 and 4 pm and a J at 5.15 pm so conditions must be good for the high frequencies. By the way, your frequency would be approx 56500 kc I should say.

"If this agrees with your log I would be pleased to get your verification OM. W R Hamilton ZL4DQ."

Thank you Maurie — I expect you sent the QSL! The period would have been around the peak or soon after for Cycle 17, so I am not surprised band conditions were good.

THE LOCAL SCENE

The bands have become rather quiet after the great flurry of activity during February and March — even April — where six metres was concerned. Roger VK5NY, reports the occasional contact to Melbourne and Mount Gambier on 144 and 432 MHz, and my own brief observations from Meningie confirm the lull in activity.

Roley VK3KXW, has not been letting the grass grow under his feet since sharing the 1296 MHz contacts to Albany earlier. He found another good set of conditions on 19/4 when he worked VK7DC at 0130 on 1296 MHz with 5 x 9 signals using FM. Similar very strong signals were available on 144 and 432 MHz. He also worked VK3KZZ on 1296 with the latter running one watt to a 28 element loop Yagi at 90 feet. This system requires the use of 101 feet of coaxial cable so the power out would not be large! Mark is located at Horsham.

On another occasion, with the band open to VK7DC, signals at 0100 on 144, 432 and 1296 were 5 x 9, 52 MHz 5 x 2, 28 MHz and 21 MHz 5 x 1. On 11/5, another 1296 contact was made with Mark VK3KZZ at Horsham, this time at 1500 with 5 x 2 signals and much QSB.

The end result of this type of activity is an upsurge in interest on 1296 and now there are quite a number of stations with that capability in both VK3 and VK5. Even the dust has been removed from the 1296 equipment at VK5LP, but the first step will be to get the antenna in the air — and that is being given consideration!

LATE NEWS

I am indebted to Hal Lund ZS6WB, for another batch of *VHF News* from South Africa. I hope that, by taking information from this newsletter I can alert VK operators to look for signals from Africa and South Africa, in particular. It is an area which has not figured prominently in contacts on VHF in this country and, although I have already given some prominence to South Africa earlier this month, I feel the following needs to be mentioned before it becomes stale news.

One very encouraging report is the mention of a Special Report in *The DX Bulletin* published by VP2ML. In this it is reported Cycle 22 may be one of the best ever. Only one year after hitting the minimum of 12, the smoothed sunspot number has increased to 40. This means that Cycle 22 is increasing at least 50 percent faster than any recent cycle and is comparable only to Cycle 19, which peaked with an SSN of 200. If the current trend continues, we could have another 200 plus peak in **mid-1989.** Earlier predictions based on statistics were for this to be a poor cycle, but updated ones are based on current numbers and should be more reliable. The advice is: Get your station and antennas ready now!

Information of the French six metre permits are said to be "precarious, personal and can be revoked." No permits are allowed within 150 kilometres of Television Station Channel 2, three watts ERP for 150 to 200 kilometres from station, 10 watts ERP if 200 plus kilometres away, and only fixed stations.

What is of considerable interest, to VK5LP at any rate, is the relatively high degree of activity of those stations permitted to operate on six metres, particularly in the European region. Looking at a map of South Africa we find Cape Town is about the same latitude as Adelaide and Pretoria the same as Maryborough, Queensland. Cape Town to Greece is similar in situation to Adelaide to Japan. Pretoria and Cyprus are about the same line, hence the 5B4CY beacon is regularly heard. There is a very large land mass to the north of South Africa with no six metre operation permitted. If it was permitted, the South Africans would have a ball and be much better off than VK. However, due to the above, South Africa and Australia are on a somewhat similar footing, as we have relatively few intervening places to our north with high levels of six metre activity.

I will save the remainder of the South African news for next month, but in the meantime, I feel that operators on both sides of the Indian Ocean should be doing more to establish six metre contacts, and with the possibility of a much better Cycle 22 than originally thought, 1989 to 1991 might just be the time to make those contacts!

CLOSURE

By the time you read this we will be into the winter Es period, maybe some of you will be rewarded with some choice contacts. Good luck.

Closing with two thoughts for the month: "Only man, among living things, says prayers. Or needs to." and "Death and taxes may always be with us, but death at least does not get any worse."

73. The Voice by the Lake.

How's DX?

REEFTON ELECTRICAL CENTENARY

To celebrate the centenary of the first generation of commercial electricity in the Southern Hemisphere, particularly at Reefton, New Zealand, the Reefton-Buller Branch of the NZART are activating amateur radio station, ZL6REC, at the town of Reefton (near Westport) from August 1-6, 1988.

It is the Branch's intention to QSL all logged contacts with a special QSL card through the bureau. However, they request **no return QSL cards, please.**

It is anticipated this operation will be conducted on a 24-hour basis using frequencies in the 80, 40 and 20 metre bands. Tests will commence on July 31.

—Contributed by ZL3MF via William Stevens VK4YN

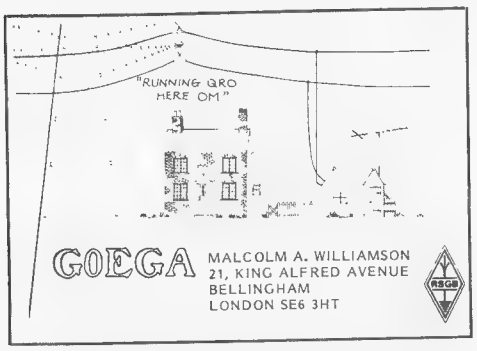
ROYAL NATIONAL LIFEBOATS

July 28-31, 1988, will see the operation of GB2RNL, an amateur station being conducted for the Royal National Lifeboats Institute at their headquarters in Poole, Dorset, UK. The station operation will coincide with the RNLI Open Days on July 30 and 31. A QSL card will be produced for the event.

GB2RNL will only operate on the HF bands around the frequencies of: 3.750, 7.050, 14.250, 21.250 and 28.500 MHz on Phone and 3.550, 7.025, 14.075, 21.075 and 28.075 MHz CW. Of course these frequencies are plus/minus QRM.

As the RNLI is totally funded by private donations to maintain it's entire operation, QSL cards will only be available via an SASE or a minimum number of IRCs for return postage. QSL to Malcolm Williamson G0EGA, 21 King Alfred Avenue, Bellingham, London, SE6 3HT, England. Please mark envelopes "GB2RNL".

—Contributed by Malcolm Williamson G0EGA



TRAVEL AROUND THE WORLD WITH AMATEUR RADIO

Amateur radio means different things to different people. There are VHF experts, AMTOR and RTTY enthusiasts, Packet Manipulators, those who work with the assistance of satellites — there are active and passive amateurs, doers and talkers — and, of course, there are the DX-chasers.

DX-chasers are peculiar people — they have an irregular sleep pattern and tired red eyes which only gleam when a rare and obscure station at the other end of the world gets on the air. Then the hunt is on! Hundreds of other chasers all over the globe want to talk to this very rare human specimen who sits in front of a microphone, or fiddles with a Morse key, and attempts to sort-out the "dog-pile". The chaser on this end is part of the pile, valiantly battling with 100 watts against the kilowatts, dipole against a 16 element log periodic antenna on a 20 metre boom, 50 metres up in the air.

Finally, as if by magic, contact is made, reports are exchanged, and sometimes, with luck, the name of the operator and the locality of each station is conveyed from one end of the globe to the other. The QSL manager's call sign is obtained and a careful entry is made in the log book, and onto the tally card — country number 257.

Those who are active on the bands do not have to be told that we are on the upswing of a new solar cycle and propagation on the HF bands is improving day by day.

So, dust off the HF equipment, familiarise yourself again with UTC time (the old GMT time is dead, very dead, and local time on QSL cards is very confusing), look around on the band and find the pattern: DX window, local traffic, SSB section, CW activity and read up on propagation. Which way is the long-path and where is the short-route? Above all, be patient and courteous towards your fellow radio enthusiast — *and have a great time. . .*

SHORT DX

QSOs sometimes develop into long, interesting chats. It was in early November, last year, 0817 UTC on 14.030 MHz. John PZ1DC, was on the other end in Surinam, a small country on the north-eastern coast of South America. We had a very long and interesting contact which lasted almost an hour. The entire contact was conducted in CW. John asked for details on Australian awards. I promised him that I would send all the details after receiving his QSL card. Not only did his QSL card duly arrive, but also a brief and interesting description of the country, of which many of us in Australia know very little. Following is his description of Surinam which I would like to share with you.

Surinam, in the official Dutch language, is spelled Suriname. It is situated between two and six degrees of northern latitude, and between 54 to 58 degrees western latitude. Mountainous rain forests cover about 80 percent of the country and most of the people live on the flat coastal area. The land covers 16 3265 square-kilometres (6 3037 square miles). The estimated population is 484 000, of which 31 percent are Creole — a mixture of white and black Africans, whose ancestors were taken there as slaves by the early British and Dutch colonialists. Hindustanis (Indian, Pakistan) makes up 37 percent of the population, 15 percent are Indonesian, three percent Chinese, (others are Europeans, Lebanese, Syrians, Americans, French), 11 percent are Bush Negroes and one percent Anirindians — the latter two live in the interior jungle. Paramaribo, with 15 0000 inhabitants, is the capital city. The Official language of Surinam is Dutch, but the native language is "Srana Tongo", a lingua franca which is widely used among the multi-racial population. English is widely spoken.

According to John, whose ancestry goes back to the Chinese and Dutch, Surinam is not Latin-American, neither is it Caribbean. It is different and a photographers paradise because of its topography and the mixture of its races.

It is also interesting to note the following historical information:

The land was sighted first by Christopher Columbus in 1498. The Spaniards and Portuguese explored the area in the 1500s. In 1651, British explorers built the first settlement there. They established cotton and sugar cane plantations and brought slaves from Africa to work the land. After the Dutch and British wars, at the peace of Breda in 1667 (16 years after the first British settlement) the Dutch took complete control of the settlement, and in exchange for the Surinam territory, gave the British the Island of Manhattan, in North America, the site of the present New York City.

Surinam became a self-governing Dutch territory in 1954 and gained full independence in November 1975 with the official call sign of ? ? .

All this information, and the exchange of many letters, began with a feeble CQ call on the 20 metre band one November evening. . .

Surinam has 73 licensed amateurs and is situated in the DX Zone 9, ITU Zone 12. QSL address is VRAS QSL Manager, Box 566, Paramaribo, Surinam, South America.

TO THE NORTH

Let's us now look at the polar regions to the north — the ice covered Svalbard Islands.

Ken McLachlan VK3AH, in the May 1988 issue of *Amateur Radio* described this lands features in detail. showing a photograph of polar bears.

It was on March 13, this year, nearing midnight in Sydney (1317 UTC), on the 14 MHz SSB band — a very clear voice was calling CQ VK. I listened expecting a rush of replies. No one answered. The band was clear, no QRM — an ideal situation. I replied and the answer was a very enjoyable QSO which continued for almost an hour. The operator was Geir, the station JW1CY. Geir is a meteorologist on a Norwegian meteorological station on Hopen Island, one of the many islands of the Svalbard group.

Geir's QTH was 25 degrees east longitude and 76 degrees 30 minutes north latitude. The temperature outside at the time of our QSO was minus-30 degrees Celsius. The island has a surface of 47 square-kilometres and at the time of the QSO, had only four inhabitants, three men and a woman, the staff of the meteorological station. The group were housed in small huts.

However, there is other life abundant on the island: polar bears. I can still hear Geir's voice as he described how "just the other day" several polar bears in search of food, broke down the door and through the walls of one hut. Fortunately, it was not the hut in which he station was situated.

There are now four coal mines on the islands, most of them operated by Russians and one by the Norwegians. There are 1300 Norwegians and 300 Russians on the islands. At the time of the QSO, there was also a Polish Arctic expedition on 12 men on the island group. (A few days earlier I had a contact with this expedition. The operator was Jacek using the call sign JW0B (QSL via SP5EVN).

It is possibly not widely known, but the months of March and September are the times when propagation is best between JW and VK.

The 1988 International Call Book lists 45 JW stations, most of them Norwegian amateurs with a JW call sign. Svalbard Islands are in the DX Zone 40, ITU Zone 18. The Norwegian QSL Bureau handles their cards (NRRL, Box 21, Refstad, N0513, Oslo 5, Norway).

—Contributed by Steve Pall VK2PS

NATAL DX GROUP — TRINDADE ISLAND PY0T

During the month of June, the Natal DX Group, in Brazil, conducted a DXpedition to Trindade Island using the call signs:

ZY0s — TO, TK, TR, TF, and TW.

All QSLs are direct-only and must be accompanied by a SASE or green stamps. (Any donations to help defray the costs of mounting this DXpedition would be greatly appreciated). QSL manager is Karl Mesquita Leite, Caixa Postal 385, 59001, Natal, RN, Brasil, South America.

—Contributed by Karl Mesquita Leite PS7KM, ZW7KM, ZY0FKL, ZY0TK on behalf of the Natal DX Group, via Jim VK2BQS and Gary ZL2AKI

DX STATIONS WORKED DURING FEBRUARY, MARCH AND APRIL 1988 in Woodbine, NSW

14 MHz

FEBRUARY : GW4NZ; IK1ATT; JA2PGU; ZK1XO (QSL via I5JHW); UY5EG; VI88WA; RB5JZ; ZL0AFZ/ZL9; YU1ABA; PA3DPP; T32BC (QSL via ZL2QW); YV5VN; VU2RSK; VU2AU; KH2D; OH9RJ; OH5OJ; AX0NE (QSL via VK9NS); UP1BYC; PA3DOB; I3KVW; OE3HAU; F6BMZ; HL9CU (QSL via AA6BB); CE1LGD; J28DN (QSL via G4UCB); ON7BP; G4VPC; VK9LM; I7ZPB; TI2SAH; YU3BQ.

MARCH: HA6KNB; NR5M; HG1S; LZ2EV; OD5KV; I0FYP; IV3SUS; VI88WA; NP4A (QSL via W3NHK); HK1LDG; VK4APJ/ Tractor Mobile

APRIL 1: LZ1AI and CT1AYN
APRIL 2: VK6ALS
APRIL 3: SP9KJT; DF2PY; TI2SAH; HL0O; 3D2DW (QSL direct to PO Box 12775, Suva, Fiji)
APRIL 6: JY5HH (heard) and 4X6KA.
APRIL 8: 4X6TT/KH8 (QSL direct to 4X6TT)
APRIL 9: YB0SY
APRIL 17: OE6PY and OK3KII
APRIL 24: AX5DI; HB9FR and HB9CXZ
APRIL 25: G3ASM
APRIL 29: RB4MF

28 MHz

APRIL 6: HL0AF
APRIL 25: UA0JFL and AX2PWI (running about two watts)

—Contributed by Bob Demkiw VK2ENU

QSL INFORMATION AND DX WORKED DURING MARCH AND APRIL in Leitchville, Vic (All SSB)

10 METRES: George VK9NKG, Cocos-Keeling (QSL via VK6NKG)
Also on the island — VK9YT (QSL via W7SW)

15 METRES: Walter CP8CB (QSL via Box 1, Riberalt, Republic of Bolivia)

20 METRES: JW6WDA, Svalbard (QSL via LA5NM)
Harry ZK1XG, South Cook (home call sign G3MCN)
YI10BGD, on 222 Net, celebrating 10 years of operation in Iraq
Larry UI8LF and Mike UJ8JCM, (QSL both via bureau)
Raj 8R1RPN, Earl 9Y4EB/8R, Tom Y24PM, Rudi HA5HS and Lar Y24UK

40 METRES: 4X6TT/FW0; T25TT; 5W1TT; 4X6TT/KH8; 4X6TT/KH6 (All of these calls are Amir 4X6TT, during his DX trek across the Pacific. QSL to Amir Bazak, Box 1446, Ramat Hasharon, Israel)
N01Z/KH1, Howland Island DXpedition (QSL to Jim VK9NS)
Rick KM1G, aboard the US Coast Guard Tall Ship *Eagle* (QSL via N1BPV)
Frank WB3KBZ/VP9 (QSL via KG8U) and Jim KH2D (QSL via KA3T)
Dave KX6DS, Kwajalein Island (QSL via the North Alabama DX Group)
Chet PJ9EE, on Triple H Net (QSL for Chet's net-only contacts via WB8SSR) Warren N200EHD, celebrating the bicentenary of the US Constitution. (QSL via N3EHD or W3 bureau)
Don J37AH (QSL via W2GHK); Jeff KG4JO (QSL via Guantanamo Bay ARC)
Roger LW1DLF (QSL via LU1DQN); Raf CX1TE (QSL via Box 17, Montevideo, Uraguay)
Ben V31DZ (QSL Box 99, Belize City, Belize); Sojo ZL5BA, on Ross Island, Antarctica
K9AJ/KH5, Kingman Reef DXpedition (QSL via WA2MOE)
Felix HJ4OIG (QSL via Box 80333, Medellin, Colombia); Guy FK8FF; Jim C21RK; John CO7KR (QSL via Box 5343, Camaguey 3, Cuba); Javir XE2TCQ; Mike C6ANX; Phil 3D2PK.

There were also about 50 US and Canadian stations.

The Triple H Net begins at 0730 UTC on 7.235 MHz. John KD0JL runs an informal and friendly DX Net most days between 0630 and 0800 on 7.162 MHz.

—Contributed by Steve Jenkinson VK3YH

WORKED FROM DURAL FROM March 11 to May 9, 1988

3.5 MHz: Franz using T22VU, (home call sign) working on Tuvalu, at 1150 UTC, in CW. QSL to home call.

7 MHz: Jack VE1ZZ, Nova Scotia on CW

10 MHz: G3EER; JAs; Ws; ZLs and VEs

14MHz: Don YB8ASX, a ZL Missionary on Halmahera Island in the North Moluccan Group, located at 1 deg 16 min north, 128 deg, 42 min East
Duncan 9Q5DA operating in Zaire on SSB (QSL via KC4NC)
Jacques 5T5CJ, Mauritania, SSB (QSL via W4BAA — fast direct return guaranteed)
Arvid JW6WDA, Svalbard, SSB (QSL via LA5NM)
Emir T25TT, Tuvalu, SSB (QSL direct to 4X6TT)
Frank TP0CE, special station of the Council of Europe. Frank is striving to have TP recognised as a separate country for DXCC. (QSL via F6FQK)
Raul CX5DY, Uruguay, near Montevideo on SSB. (QSL direct to PO Box 37, Montevideo, Uruguay)
C31LHK, Andorra (QSL to PO Box 150, Andorra)
Mulay S0RASD, Rio de Oro region of West Sahara (QSL via his manager, EA2JG)
CQ0CIR, Azores and FM5CL, Martinique, were worked in the CQ WPX Contest (QSL FM5CL to W3DJZ)
Zedan JY3ZH, Jordan (QSL via bureau)
Rick KM1G/MM Region 2 on his return voyage to the USA after taking part in the Australian Bicentenary Celebrations on the tall ship *Eagle*
Camilo HP1AC, Panama (QSL via Box 600583, El Dorado, Panama quick return on a direct card)
Hugo HB0LL, Liechtenstein (QSL via bureau)
Hasan 5N8ZHN, Nigeria (QSL via Box 293, Kano, Nigeria)
Jaime EA6WV, Mallorca Island (QSL direct to Box 1386, 07080, Palma, Mallorca, Spain)
Barry 4K0DX, an American who is part of a Russian Research Station situated on a floating ice floe near the North Pole
Hani OD5KV, Lebanon (QSL via PO Box 70567, Lebanon)
Mike 5B4TI, Cyprus (QSL via PO Box 7121, Nicosia, Republic of Cyprus)
K9AJ/KH5, Kingman Reef DXpedition (QSL via WA2MOE). The DXpedition on Palmyra Island was conducted under the call sign of W0RLX/Portable KH5P. The same QSL route applies for this station.
CI8C, the Canadian Polar Expedition with its headquarters at Resolute Bay, North West Territory, Canada. Resolute Bay is near the Magnetic North Pole. (QSL via VE3HBF)
Roland TR8CR, Gabon
Clayton J73CB, Dominica Republic (QSL via Call Book address)

21 MHz
Walter CP8CB, Riberalta, Bolivia, PO Box 1, Riberalta, Beni, Bolivia
KL7LF/KH3, Johnston Island (QSL via KL7VZ)
Don A92BE, Bahrain (QSL via Box 26803, Manama, Bahrain)
George VK9NKG, Cocos-Keeling (QSL via VK6NKG)

24 MHz
Al W7EXR, Seattle — first QSO on this band

28 MHz
NO1Z/KH1, Howland Island DXpedition (QSL via VK9NS)
Edwardo TI4JHQ, Costa Rica, (QSL via bureau)
Curtis KB5ENR/KH3, Johnston Island (QSL via N5DAS)
Scott VK9YT worked on CW, April 22. Home call sign W7SW
Marcial YV5AE, Venezuela, CW (QSL via bureau)

—Contributed by Steve Pall VK2PS

International News

The International Telecommunications Union gained its 164th Member country in March, this year.

The Republic of Vanuatu (formerly known as the New Hebrides) achieved independence on July 30, 1980. The granting of independence saw the end of the Anglo-French Condominium of three quarters of a century.

The new Republic comprises an archipelago of in excess of 80 islands covering a land area exceeding 12 000 square kilometres which is situated 300 kilometres west of Fiji and a mere 150 kilometres north west of New Caledonia. The islands have rugged mountainous interiors surrounded by narrow coastal strips, where most of the estimated 135 000 inhabitants live.

It is estimated that 46 percent of the population is gainfully employed, the majority (76 percent) in agriculture, and the remaining labour force in services, manufacturing and retriculation of electricity and other necessities.

The domestic telephone and telegram network comprises some 3 500 telephones which have access to approximately 1600 exchange lines. Automatic exchanges are installed in the capital Port Vila (a population in the vicinity of 15 000) and at Luganville. All rural areas are serviced by a network of radio stations. The national radio station, Radio New Hebrides operates a service each day of the week in French, English and Pidgin. Aviation and marine facilities are provided from Port Vila and Luganville.

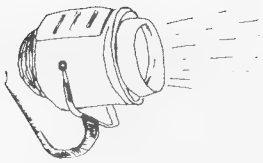
A satellite earth station is located in Port Vila, which provides international telephone, telegram and telex services. There are direct circuits to Noumea, Sydney, Hong Kong, Auckland, Suva and Paris of high quality communications on an around-the-clock basis, so in no way can Vanuatu be termed isolated from the major countries of the world, even from its idealistic quiet location in the Pacific.

THE INTERNATIONAL TELECOMMUNICATIONS UNION

The International Telecommunications Union (ITU) was founded in 1865 and as such is the oldest inter-governmental organisation. In 1947, it became a specialised agency of the United Nations. The ITU is the international organisation responsible for the planning of telecommunications worldwide, for the establishment of equipment and systems operating standards, for the co-ordination and dissemination of information required for the planning and operation of telecommunication services and, within the United Nations system, for the promotion of and contribution to the development of telecommunications and the related infrastructures.

The amateur fraternity in most member countries use special prefixes and call signs on May 17, each year, to commemorate the inauguration of the ITU and recognise the work it has done to further telecommunication techniques and particularly its assistance to the hobby we are privileged to enjoy.

—Summarised from ITU Press Releases 88-6 and 88-8, by Ken McLachlan VK3AH



Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

There was an interesting program on the BBC World Service recently, where the Director-General of the BBC External Services participated in a phone-in session that was simulcast with BBC television. Most queries mainly concerned programming, although two very interesting questions were raised on the technical level. One was from an American listener about the future of the BBC Hong Kong Relay Base after 1997, when the Crown Colony reverts to Chinese sovereignty. Mr Teucer was unable to give a firm assurance that it could continue, although the question has been raised at high levels in Beijing. The Hong Kong relay is providing very good signals into northern China and "English by Radio" is widely listened to.

The second question that was interesting to me was from Arthur Cushen. Arthur has been a monitor for over 45 years for the BBC and other international broadcasting organisations. There has been recent press speculation that the BBC and Radio New Zealand are interested in establishing a new transmitting site to serve the South Pacific. Both organisations are aware of inadequacies of audibility of their signals, particularly in the wake of the Fijian coups last year. Radio New Zealand is still utilising 40 year old, 7.5 kW senders which are obsolete and there is a need to upgrade. Hence, the reason for recent discussions between the two.

Mr Teucer stated it did depend on the British Foreign Office who funds the BBC External Service, whether it went ahead. The Foreign Office had other priorities, mainly the huge audiences in India, Pakistan and Central Africa. The Fijian crisis highlighted the need for an upgraded service and he acknowledged the co-operation of Radio Australia in being able to make transmitters available in the short term, to get signals into the South Pacific during the critical phase of the crisis.

One interesting fact that is emerging with the dramatic rise in the Solar Flux, is the increasing appearance of harmonic radiation from some senders. There is a Chinese broadcast on 10.150 MHz sometimes, yet it is weak, but it is the second harmonic of 5.075 MHz, which is the Central Network station in Beijing. Radio Moscow, in Spanish, is heard on 7.300 MHz at 0430 UTC, as well as its second harmonic on 14.6000 MHz. Recent reports on DX programs have stated that Radio Nepal is heard better on its sixth harmonic at 1115 UTC, in English, that at its fundamental frequency of 5.005 MHz. 30.030 MHz has been heard across the Indian sub-continent and the mid-east.

There is one Australian station that I still hear quite well in the evening hours on its fifth harmonic. The station is located at Sydenham, Victoria, and is on 774 kHz. Another ABC station in Gippsland is occasionally heard on the second harmonic on 1.656 MHz. A few years ago, in the Intruder Watch, we had a report of an ABC station on 3.564 MHz causing a constant heterodyne. At the time, we did not know whether it was the sixth harmonic of 3WV Horsham, or the fourth harmonic of 5AN, in Adelaide. In the end, it turned out to be both.

Some months ago I was hoping to review both the *World Radio and TV Handbook,* and the *International Broadcasting Handbook.* Unfortunately, I have not been able to do that, but I should be able to see a copy of the WRTH '88 soon. However, the *International Broadcasting Handbook* never made it to the printers. I was one of the hundreds who got caught with the pre-publication offer. It was compiled by Bernd Friedewald, who has compiled the *International Listening Guide* in the past. However, according to Radio Netherlands Media Network, the production of the ILG and handbook became too much for one individual. Not surprisingly, there have been many complaints about the book's non-appearance. The Media Network report also stated that publication of the ILG has also been delayed until November, with the publication only coming out every six months instead of quarterly.

The future of the ILG is therefore questionable. This is the second time I have got my fingers burnt ordering an overseas publication related to short-wave listening. The first occasion was *Voices* — a Finnish publication devoted primarily to programming. It went bankrupt. So I would strongly advise readers to check everything out very well before you part with any cash, if the publication is available from a local source, instead of ordering from overseas.

Radio Moscow World Service has sent out a questionnaire, according to Gerry McCulloch VK2BMZ, asking for listeners comments about their programming. It looks as if there has been "perestroika" (re-structuring) taking place within the World service. I was honestly shocked to actually hear a rock program on RM World Service. It is on fortnightly and called "Listeners' Request Club", being hosted by a Vasily Stroganoff.

The next scheduled broadcast from the Red Cross Broadcasting Service, in Geneva, Switzerland, was to be June 30, between 0740 and 0757 UTC, frequencies of 9.560, 13.685, 17.830 and 21.695 MHz. You could also try 1040 and 1057 UTC on 11.935, 13.685, 15.570 or 17.830 MHz. Other broadcasts are scheduled on August 1 and 4, at the same times and frequencies.

Well, that is all for this month. Remember that I am always interested to hear from you. My QTH is at the head of this column! Until next time, the very best of listening and 73. Robin VK7RH.

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Contests

Frank Beech VK7BC
FEDERAL CONTEST MANAGER
37 Nobelius Drive, Legana, Tas. 7251

CONTEST CALENDAR

JULY 1988

— 1 Canada Day Contest
— 2 Adelaide Hills ARS National Sprint (CW Section)
— 9 Adelaide Hills ARS National Sprint (Phone Section)
9 — 10 IARU HF World Championship
— 10 ARCI QRP CW Sprint
16 — 17 CQ magazine WW WPX VHF Contest (Rules June issue)

AUGUST 1988

— 6 YLRL YL/OM SSB Sprint
13 — 14 WIA Remembrance Day Contest (Rules this issue)
13 — 14 European DX Contest CW Section (Rules this issue)
27 — 28 All Asian CW Contest (Rules June issue)

SEPTEMBER 1988

10 — 11 European DX Contest SSB Section (Rules this issue)
24 — 25 CQ WW RTTY Contest

OCTOBER 1988

1 — 2 VK-ZL-Oceania DX Contest SSB Section
8 — 9 VK-ZL-Oceania DX Contest CW Section

NOVEMBER 1988

12 — 13 European DX Contest RTTY Section

The rules for the Australian National Amateur Radio Teleprinter Society RTTY Contest, that was held on the weekend of June 4-6, and published in this column in June, were sent to me by the contest editor of CQ magazine, W1WY. Contest information frequently takes many weeks to reach me from Caulfield South, and with the time it has taken to arrive from overseas, more often than not, is far too late to meet the publication deadlines.

The Remembrance Day Contest for 1988 will include the "open" section again. This step was taken in response to many requests received with the entries for last year's contest.

The other rule change is the requirement to pass a signal report. With the increased level of activity we are now experiencing on the higher bands, this year's RD activity should be spread around much more and will provide some really high scores.

John Litton ZL1AAS, who is the NZART VK/ZL/Oceania Manager, has written to me to advise of the promotion of the VK/ZL/Oceania Contest for 1988. The SSB section will be held over the weekend of October 1-2, and the CW section will be held over the weekend of October 8-9. The rules are basically the same as last year. The complete rules will be published when I have them to hand.

John tells us that, for over 40 years, Jock White ZL2GX, has been contest and awards manager for the NZART. During this time he has been (and still is) truly "Mr DX of New Zealand". However, he is now deservedly taking life a little easier, and, although he is still looking after awards, the position of contest manager has been divided.

I would think that being contest and awards manager for 40 years must be a world record, and with such a wealth of experience, Jock should write a book, that is if he has time now that he can spend more time on the air. FCM.

I have read various comments and suggestions for VHF contests run by the Institute, some have been quite complex in many ways, with methods of scoring that would appeal to many with degrees in higher mathematics or have access to computers with megabytes by the tonne. Many comments have been made by operators of what I would call "well set up and well placed VHF stations" most of these comments have suggested that the rules for the last Ross Hull Memorial Contest left much to be desired and have reduced the contest to little more than a DX chase. Let us see what the DX chase was about, firstly a contestant had to exchange a signal report and locator square number, to increase the number of locator squares, a station would be always on the lookout for stations within different locator squares and the really distant station are still valuable contacts for our super-stations.

These contests are not just a means for a few super-stations to demonstrate that, with a super site and super gear, they can, if conditions are right, drop a signal into a receiver 3000 kilometres away, we all know you can, and these VHF contests have received less and less support as the years have passed by. What I have attempted to do is provide some rules that are not complicated in any way, and give all stations the incentive to get out into the field and activate an unused Maidenhead Locator Square for the pleasure of other contestants.

These Locator Square contacts could provide the basis for some activity promoting awards that are sadly lacking in this country of ours.

The amateurs who sent me logs for the last Ross Hull Contest appeared to have enjoyed themselves, that is the impression that I received from the various comments.

If those amateurs who would like to have a separate contest for each of the VHF bands, based on distance transmitted/received, and who would be prepared to support such a contest actively, could indicate to me the approximate number of stations that would participate, I would accommodate them with separate contests.

The degree of Maidenhead Locator Square depth used in the Ross Hull Contest was deliberately chosen to reduce the number of squares workable in the metropolitan areas and, at the same time, not to have too many available for any future Australia-wide awards that may become available.

REMEMBRANCE DAY CONTEST 1988

As in previous years I will list the names of those amateurs who lost their lives whilst on active service during the Second World War, and who are commemorated with their names being engraved on our Remembrance Day Contest Trophy.

It is these names that you will hear read out as part of the Opening Ceremony prior to the commencement of the Contest.

VK2BQ	F W S Easton	Royal Australian Air Force
VK2JV	C D Roberts	Australian Military Forces
VK2VJ	V J E Jarvis	Royal Australian Air Force
VK2YK	W Abbott	Royal Australian Air Force
VK2AJB	G C Curle	Royal Australian Air Force
VK3DQ	J D Morris	Australian Military Forces
VK3GO	T Stephens	Royal Australian Air Force
VK3HN	J McCandlish	Australian Military Forces
VK3IE	J E Mann	Royal Australian Navy
VK3NG	N E Gunter	Australian Merchant Marine
VK3OR	M D Orr	Royal Australian Air Force
VK3PL	J F Colthorp	Royal Australian Air Force
VK3PV	R P Veall	Australian Military Forces
VK3SF	S W Jones	Australian Military Forces
VK3UW	J A Burrage	Royal Australian Air Force
VK3VE	J E Snadden	Royal Australian Air Force
VK4DR	D A Laws	Australian Military Forces
VK4FS	F J Starr	Royal Australian Air Force
VK4PR	R Allen	Royal Australian Air Force
VK5AF	C A Ives	Royal Australian Air Force
VK5BL	B James	Royal Australian Air Force
VK5BW	G J Phillips	Australian Military Forces
VK6GR	A H G Rippin	Royal Australian Navy
VK6JG	J E Goddard	Royal Australian Air Force
VK6KS	K S Anderson	Australian Military Forces
VK6PP	P P Paterson	Royal Australian Air Force

1988 REMEMBRANCE DAY CONTEST — RULES

Objectives

Amateurs in each VK call area will endeavour to contact other amateurs:

In other VK call areas, P2 and ZL in the bands 1.8 to 30 MHz, with the exception of the WARC bands 10, 18 and 24 MHz.

In any VK call area, including their own, P2 and ZL on bands above 52 MHz, and as indicated in Rule 5.

Contest Period

Between 0800 UTC August 13, and 0759 UTC August 14, 1988.

**** All Australian amateur stations are requested, as a mark of respect, to observe 15 minutes silence prior to the commencement of the contest.*** During this period the Opening Ceremony Broadcast, will take place.

Rules

1. There will be two contest categories.
   (a) High Frequency (HF) — for the bands below 52 MHz.
   (b) Very High Frequency (VHF) — for the 52 MHz band and above.
2. In each category there will be four sections.
   (a) Transmitting Phone
   (b) Transmitting CW
   (c) Transmitting Open
   (d) Receiving.

Modes applicable to each section are as follows:
   (a) AM; FM; SSB; TV
   (b) CW; RTTY
   (c) AM, FM, SSB, TV, CW, RTTY
   (d) Any of the above listed modes

3. Eligibility:
   All Australian amateurs (VK call sign) ZL and P2 stations may enter the contest, whether their stations are fixed, portable, or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.
4. Cross Mode Operation is permitted. Cross Band Operation is **not** permitted excepting via a satellite repeater.

5. Scoring

(a) Phone contacts score one point.

(b) CW and RTTY contacts score two points.

(c) On all bands a station in another call area may be contacted once on each band using each mode; ie, you may work the same station on each band in Phone, CW, RTTY and TV.

(d) On the VHF bands the same station in ***any*** call area may be worked using any of the modes listed at intervals of not less than two hours since the same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.

(e) Acceptable logs for all entries must show a minimum of at least 10 valid contacts, and in the open section, a reasonable mixture will be required; ie, a log with 500 phone and 10 CW contacts would be judged as a phone entry.

6. Multi-Operator Stations Are Not Permitted (except as in Rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign. Should two or more operators wish to operate any particular station each will be considered as a contestant and must submit a log under the individual call sign which applies to that operator. Multi-Station operators are not allowed.

7. Club Stations may be operated by more than one operator, but only one operator may operate at any time; ie no multi-transmission. All operators at a club station must sign the declaration.

8. Contest Exchanges

For a contact to be valid a signal report and serial number must be exchanged. This will consist of a RS/T plus serial number. The serial number will commence with 001 and increase by one for each contact. Should the serial number of 999 be reached, the serial number will again revert to 001.

9. Terrestrial Repeaters

Contacts via terrestrial repeaters are not permitted for scoring purposes. Contacts may be arranged through a repeater and if successful on another frequency will count for scoring purposes. The practice of operating on repeater frequencies in simplex mode is not permitted.

10. Portable Operation

Log scores of operators located outside their allocated call areas will be credited to that call area in which the portable operation took place.

11. Entries

A log of all contacts must be submitted. This should be in the format as shown in the examples and must be on one side of the paper only.

Entries must be on a standard size sheet such as Foolscap or A4, etc. Larger computer printout sheets are acceptable. Pieces of scrap paper and narrow rolls will not be accepted.

A Front Sheet must also be included showing the following information in this order:

Category (HF or VHF). Section (Phone, CW, Open, Receiving). Call Sign, Name, Address, Total Score, Page Tally.

Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."

Signed: . . . . . *Date:* . . . . . .

Logs are to be forwarded to the Federal Contest Manager, C F Beech VK7BC, 37 Nobelius Drive, Legana, Tas. 7277.

Envelopes are to be endorsed REMEMBRANCE DAY CONTEST on the FRONT. Entries must be forwarded in time to reach the Federal Contest Manager by September 30, 1988.

12. Disqualification — see the general disqualification rules as printed in the Contest Section of June 1988 *Amateur Radio*.

Contestants should also note the General Contest Basic Rules in the same issue.

Any station observed during the contest as constantly departing from the generally accepted codes of operating ethics may also be disqualified.

Late entries will be used as Check Logs only.

Receiving Section

1. This section is open to all shortwave listeners in Australia, Papua New Guinea and New Zealand. No active transmitting station may enter this section.

2. Contest Times and logging of stations on each band are as for transmitting.

3. Logs should be set out as per the example. It is not permitted to log stations calling CQ. The details shown in the sample must be recorded.

4. Scoring will be as per Rule 5 for transmitting with the other aspects of that same rule also applying.

5. Club Stations may enter this section. All operators must sign the declaration.

6. Awards

Certificates will be awarded to the highest scorer in each call area. Further certificates may be issued at the discretion of the FCM.

Determination of the Winning Division

Scores of stations in VK0 are added to VK7.

Scores by VK9 stations are added to the mainland call area which is geographically nearest.

Scores claimed by P2 and ZL stations are not included in the scores of any VK call area.

The formula used to determine the winning WIA Division is applied on a Divisional basis using a combination of three factors, namely, involvement, activity and weighting factor.

Guidelines for Certificate Issue, Remembrance Day Contest

Certificates will be issued on the following basis:

1. Top scorer in each section (see also 4 below).

2. Top novice station in each section, but as per proviso 3 below. (N/K calls compete on an equal basis when operating in HF (novice) band segments. Therefore, there is no justification for separate certificates for each different type of call sign).

3. Where an entry other than the top scorer is concerned (as per 2 above), a certificate will only be issued to a station if that station's score is equal to, or greater than, the average score in the applicable section for that State/Division.

4. Where only one entry exists in any section, a certificate will only be issued when the score for that entry is equal to, or greater than, the average national score for that category/section of the contest.

5. On VHF, the top scorer in each section will be awarded a certificate. There is no justification for separate awards for holders of Full, Z or K call signs as each competes on an equal basis on VHF.

6. The above rules apply with the understanding, as already determined policy, that the Federal Contest Manager has the power of discretion in such matters and may either award additional certificates where he considers it warranted or not issue a certificate if he considers one unwarranted.

EXAMPLE FRONT SHEET
Remembrance Day Contest 1988

Category: HF **Section:** (a) Transmitting Phone
Call Sign: VK8ZZZ **Name:** Tom Brown
Address: 807 Iceberg Road, Darwin, NT. 8100
Total Score: 2536 points

Page Tally	14 Sheets Page	2536 points Score
	1	46
	2	38
	-	-
	-	-
	-	
Total	14 Pages	2536 points

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.
Signed: T Brown **Date:** 3.9.88

EXAMPLE TRANSMITTING LOG
Remembrance Day Contest 1988
Call Sign: VK8ZZZ **Category:** HF
Section: (a) Transmitting Open

DATE TIME (UTC)	BAND (MHz)	MODE	CALL SIGN	NO SENT	NO RCD	PTS
13 8 88						
0801	14	SSB	VK6NE	57001	56001	1
0802	14	SSB	VK4Ti	59002	58001	1
0804	14	SSB	VK7BJ	59003	59003	1
0806	7	CW	VK0AA	559004	479003	2
0809	7	SSB	VK7BC	55005	58001	1
0809	7	SSB	VK7BC	55005	58001	1
Page 1 of 13						Page Total 62

EXAMPLE RECEIVING LOG
Remembrance Day Contest 1988
NAME/SWL NO: L81234. **CATEGORY:** HF
SECTION: (d) Receiving Phone

Date Time (UTC)	Band (MHz)	Mode	Stn Calling	Stn Called	No Sent	No Rcd	Pts
13.8.88							
0800	21	SSB	VK1XXX	VK6LLL	001	002	1
0815	7	SSB	VK7YY	VK8QW	014	009	1
0815	7	SSB	VK7YY	VK8QW	014	009	1
Page 1 of 8							Page Total 42 points

EUROPEAN DX CONTEST 1988

Contest Periods

CW August 13-14, 1988

SSB September 10-11, 1988

RTTY November 12-13, 1988

1200 UTC Saturday to 2359 UTC Sunday.

Bands — 3.5; 7; 14; 21; 28 MHz.

The minimum time of operation on a band after a band change is 15 minutes — except for working a new multiplier. According to Region 1 IARU regulations contest operation is not allowed on the following band sections:

CW: 3.550-3.800; 14.075-14.350; 21.100-21.450; 28.100-29.700 MHz

SSB: 3.650-3.750; 14.300-14.350; 21.400-21.450; 28.700-29.700 MHz.

Classifications

(a) Single operator, all bands

No assistance in log keeping and multiplier searching allowed.

(b) Single Operator — high bands

As above, but operation on 14, 21, 28 MHz only.

(c) SWL. See special regulations (Rule 12).

4. Rest Periods

Of the 36 hour contest period only 30 hours of operation are permitted for single operator stations. The six hours of non-operation may be taken in one, but not more than three periods at any time during the contest. They must be clearly marked in the log.

5. Exchange

A contest QSO can only be established between a non-European and a European station (except in RTTY). Exchange the usual five or six digit RS/T plus a progressive QSO number starting with 001. A station may only be worked once per band.

6. Multipliers

The multiplier for non-European stations is determined by the number of European countries worked on each band (see WAE countries list). European stations use the current DXCC countries list. Each non-European country counts one multiplier unit per band.

Multiplier Bonus

The multiplier on 3.5 MHz may be multiplied by four

The multiplier on 7 MHz may be multiplied by three

The multiplier on 14/21/28 MHz may be multiplied by two

7. QTC Traffic

Additional point credit can be achieved by reporting a QTC, ie, data of a QSO between a non-European and a European station earlier in the contest, back to a European station. After working a number of European stations these QTCs can be reported back during a QSO with another European station. A QTC can only be sent from a non-European to a European (for RTTY see Rule 13).

(a) A QTC contains the time, call sign and QSO number of the station being reported QTC; ie 1307/DA1AA/431, means you worked DA1AA at 1307 UTC and received his serial number 431.

(b) A QSO may be reported only once and not back to the originating station.

(c) A maximum of 10 QTCs can be sent to the same station, which can be worked several times to complete this quota. Only the original contact, however, has QSO point value.

(d) Keep a uniform list of QTCs sent. QTC 3/7 indicates that this is the third series and that seven QSOs are now being sent.

(e) European stations may record the QTCs received on a separate sheet with a clear indication of their sender.

(f) If more than 100 QTCs are claimed, a QTC check list must show that the maximum quota of 10 QTCs per station is not exceeded.

8. Scoring

The final score is computed by multiplying the sum of the total number of QSOs and QTCs by the sum of multipliers from all bands. (cf Rule 6).

9. Contest Awards

Certificates will be awarded to the highest scorer in each of the different classification in each country, a reasonable score provided. Continental leaders will receive a plaque. Each participant with at least half the score of the continental leader will receive a certificate.

10. Disqualification

Violation of the rules of this contest, or unsportsmanship conduct, or taking credit for excessive duplicate contacts will be deemed cause for disqualification. Each duplicate QSO or excessive QTC will result in a penalty of three QSO/QTC points.

11. Logs

To ease checking participants are expected to arrange their logs according to the official WAEDC log form. All band changes have to be clearly indicated. The log must be accompanied by a summary sheet and dupe check sheets for all bands with more than 200 contacts. Sample log and summary forms are available from the address below. Please send an SSAE or sufficient postage (IRCs).

12. Special Regulations for SWLs

SWL log stations working in the WAEDC . Participation is only possible in the single operator/all band class. SWL logs from members of a team in the transmitting category cannot be accepted. The same call sign European or non-European may only be logged once per band. The log must contain both call signs and at least one of the control numbers. Each contest QSO logged counts two points, each complete QTC (maximum 10 per station) one point. Multipliers are determined by the DXCC country and WAE country lists (Rule 6).

13. Special Regulations for RTTY

In the RTTY section of the WAEDC there are no continental limitations. QTC traffic, however, is not allowed within one's own continent. Each station may send and receive QTCs. The sum of QTCs sent and received must not exceed 10.

14. Deadline for Entries

CW: September 15, 1988; Phone: October 15, 1988; RTTY: December 15, 1988.

15. Mailing Address

WAEDC Contest Committee, PO Box 1328, D-8950 Kaufbeuren, Federal Republic of Germany.

16. WAE Countries List

C31, CT1, CU, EA, EA6, EI, F, G, GD, GI, GJ, GM, GM Shetland, GU, GW, HA, HB, HB0, HV, I, IS, IT, JW Bear, JW Spitsbergen, JX, LA, LZ, OE, OH, OH0, OJ0, OK, ON, OY, OZ, PA, SM, SP, SV, SV5 Rhodes, SV9 Crete, SV Athos, T7, TA1, TF, TK, UA 1346, UA2/UZ2F, UA1 Franz Josef Land, UB, UC, UN/UA1N/UZ1N, UO, UP, UQ, UR, Y2, YO, YU, ZA, ZB2, 1A0, 3A, 4U1 Geneva, 4U1 Vienna, 9H1.

Criteria for the Awarding of Certificates and Trophies in the WAEDC

1. Minimal requirements for a certificate or a trophy are 100 QSOs or 10 000 points. In addition, at least one of the following conditions must be fulfilled.

2. Certificates

(a) Top score in a country.

(b) In countries or districts with a high participation, an additional certificate will be given for each full block of 10 participants.

(c) Members of the top 10 or top six (multi-operator) lists.

(d) Continental winners.

(e) Stations with at least half the score of their continental winner.

(f) Participants with at least 10 000 points.

3. Trophies

(a) Continental winners in the single operator category are awarded a plaque.

(b) Continental winners in the multi-operator category will be awarded a plaque if they have at least 100 000 points or at least the score of the winner in the single operator category in their continent.

(c) A station may receive a plaque in the same category only once within a three year period.

(d) Special plaques will be presented to all members of the top 10/six if they have been in this list for at least five times.

(e) The WAEDC committee reserves the right to honour outstanding achievements in the contest by additional plaques.

THE SUNSHINE STATE JACK FILES MEMORIAL CONTEST 1988

All licenced amateur radio operators throughout the world are invited to participate in the Sunshine State Jack Files Memorial Contest for 1988.

1. Object

The Aim of this contest is:

Firstly, to perpetuate the memory of the late Jack Files who was a long-time Council member of the Queensland Division of the WIA; and

secondly, to enable amateur radio operators to work Queensland stations for the *Worked All Queensland Award,* and other awards issued by amateur radio clubs in Queensland.

2. Period

The contest will be run in two timer periods:

First period — Saturday, July 16, 1988, from 0830-1230 UTC

Second period — Saturday/Sunday, July 16-17,1988, from 2330-0130 UTC.

3. Divisions and Sections

1. Stations within VK4:
   (a) Transmit all bands.
   (b) Transmit HF only.
   (c) Transmit CW only.
   (d) Club stations only.
2. Stations outside VK4:
   (a) Transmit all bands.
   (b) Transmit CW only.

4. Centre Frequencies

PHONE	CW
1.830 MHz	1.810 MHz
3.580 MHz	3.530 MHz
7.110 MHz	7.015 MHz
14.190 MHz	14.050 MHz
21.190 MHz	21.135 MHz
28.500 MHz	28.100 MHz

5. Operation

Phone and CW operation:

Each station may be counted as twice on each band for credit; once on phone and once on CW.

All contacts must be made in accordance with operator and station licence requirements. No net or cross-mode contacts will be valid for scoring purposes.

Station may be worked again after an elapsed time of one hour.

6. Calling Procedure

Phone: call CQ Jack Files Contest.

CW: call CQ Test Jack Files.

7. Exchanges

The usual RS/T together with serial number commencing at 001.

8. Scoring

For scoring on HF, Queensland is divided into two zones, the dividing line being the Tropic of Capricorn. On all bands, a bonus of 10 points may be claimed for the first contact to a Queensland City or Shire on each band during both, **not** each session. Also, a bonus of 10 points may be scored for each contact with a VK4 club station.

(a) Stations in VK4:

HF contacts within the same zone — three points.

HF contacts with stations in opposite zone — five points.

CW contacts: double points but not double bonus points.

Contacts with stations outside VK4 — two points.

(b) Stations outside VK4:

HF, VHF and UHF contacts with VK4 stations — two points. Bonus points apply. No points for contacts with stations outside VK4.

9. Logs

Logs must show full name, call sign, and address of the operator, the section entered, the points claimed for each contact and the total number of points being claimed.

Logs must be legible and signed by the contestant with a declaration that the legal operational requirements were adhered to.

The decision of the Contest Manager will be final.

Logs to be sent to: VK4 Contest Manager, T Mulholland VK4AEM, PO Box 35, Caloundra City, Qld. 4551, by August 12, 1988.

10. Awards

Trophies will be awarded to the highest scorer in each section. However, should a contestant receive an award in one section he/she will not be eligible for an award in any other section.

KEYMEN'S CLUB OF JAPAN SINGLE OPERATOR CW CONTEST (Rules for non-Japanese Stations)

Period:

Saturday August 20 1988, 1200 UTC to Sunday, August 21, 1988, 1159 UTC.

Categories:

Single operator, Multi-bands, CW only.

Contest Exchange:

JAs — RST plus Prefecture/District Code.

Others — RST plus Continent Code.

Invalid Contact:

a. Contact with a multi-operator station.

b. Cross-mode or non-CW.

c. Cross-band, via repeater or satellite.

d. Contact between non-JA stations.

Scoring:

a. Points — For the complete contact with a station in Japan confirmed by the log submitted by all entrants — two points. For an incomplete one — one point. For an unconfirmed contact — 0 points.

b. Multipliers — 47 Japanese prefectures and 14 districts in Hokkaido in each band.

c. Final Score — Multiply points by the sum of multipliers.

Log Instructions:

a. Log should indicate Time in UTC, Call Sign and Exchange.

b. Multipliers should be clearly marked in the log only for the first time when it is worked in each band.

c. Use a separate sheet for each band.

d. Be sure to attach a summary sheet.

Awards:

a. The top through to the third scorer.

b. The top scorer in each continent who is ranked in the highest of the entire entrants.

Disqualification:

An entry with more than two percent duplications and/or invalid contacts left in the log will be disqualified. Violation of the amateur radio regulations and/or the rues of the contest will cause disqualification.

The decision of the KCJ Contest Committee is official and final.
Submission of Logs:
All entries must be postmarked no later than the last day of September and mailed to the Contest Commissioner of KCJ: Yasuo Taneda JA1DD, Gyoda Cho 3-9-2-102, Funabashi City, Chiba, 273, Japan.
Sponsor:
Keymen's Club of Japan (KCJ since 1976).
President — JA1DCL.
REFERENCE:
Codes of the Continents:
Asia — AS; North America — NA; South America — SA; Europe — EU; Africa — AF; Oceania — OC.
Codes of the Japanese Prefectures:
AC — Aichi; AM — Aomori; AT — Akita; CB — Chiba; EH — Ehime; FI — Fukui; FO — Fukuoka; FS — Fukushima; GF — Gifu; GM — Gumma; HG — Hyogo; HK — Hokkaido*; HS — Hiroshima; IB — Ibaraki; IK — Ishikawa; IT — Iwate; KA — Kagawa; KC — Kochi; KG — Kagoshima; KM — Kumamoto; KN — Kanagawa; KT — Kyoto; ME — Mie; MG — Miyagi; MZ — Miyazaki; NI — Niigata; NN — Nagano; NR — Nara; NS — Nagasaki; ON — Okinawa; OS — Osaka; OT — Oita; OY — Okayama; SI — Shiga; SG — Saga; SN — Shimane; SO — Shizuoka; ST — Saitama; TG — Tochigi; TK — Tokyo; TS — Tokushima; TT — Tottori; TY — Toyama; WK — Wakayama; YG — Yamaguchi; YM — Yamagata; YN — Yamanashi.
* Not used in this contest. See below.
Codes of the Districts of Hokkaido
AB — Abashiri; HD — Hidaka; HY — Hiyama; IR — Iburi; IS — Ishikari; KK — Kamikawa; KR — Kushiro; NM — Nemuro; OM — Oshima; RM — Rumoi; SB — Shiribeshi; SC — Sorachi; SY — Soya; TC — Tokachi.

Japanese multi-operator stations can be identified by their call signs.

Prefix 8J1 through to 8J0 (Ex-8J1ITU).

Suffixes RL (Ex-JA1RL).

Suffixes of three letters originating with Y or Z (Ex-JA1YWX, JA1ZLO).

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Book Review

BEAM ANTENNA HANDBOOK

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

The authors draw on their experiences and those of others over the past 50 years. William Orr W6SAI and Stuart Cowan W2LX, first built two element 20 metre beams in the mid-1930s.

This updated book contains practical design, construction, installation and operating information for HF and VHF Yagi beams. It also covers Log Periodics, Quads and Vertical beams.

Beams for the 10, 18 and 24 MHz WARC bands are included.

Chapter 1 "Radiation and Propagation" looks at how antennas work, and the effects of antenna height. It reviews the relationship of the ionosphere and sunspots to DX communication.

Chapter 2 "The Yagi Beam Antenna" covers the theory of this type of antenna including gain, directivity, feedpoint resistance, front-to-back ratio and polarisation.

These basic chapters are well written and concisely give the necessary antenna theory concepts.

The following chapters over multi-band beams, transmission lines, antenna matching, construction and installation, test instruments, six questions about beam performance, and a brief chapter on compact Yagis for different locations, wire beams and log periodics. Dimensions are both in imperial and metric.

The book is well illustrated and aimed at those wanting to build Yagis with the minimum of fuss.

Beam Antenna Handbook by William Orr W6SAI and Stuart Cowan W2LX, is available from your Divisional Bookshop now.

Please note: As the printed brochure DOC 71 was not available for study on June 1, 1988, the August Regulations Examination will be based on the existing Handbook.

AMATEUR EXAMINATION SYLLABUS

The following syllabus breakdowns became effective from June 1, 1988.

NAOCP — SECTION O (Theory)

SYLLABUS SECTION	TOPIC	NUMBER OF QUESTIONS
1	Electrical laws and circuits	8
2	Circuit symbols	
3	Mathematics	
	Note — questions on topics 2 and 3 are included in the various subject headings	
4	Semiconductors	6
5	Vacuum tubes	1
6	Power supplies	3
7	Oscillator and amplifier principles	2
8	Transmitters	5
9	Receivers	6
10	Propagation	4
11	Antennas and transmission lines	4
12	Test equipment and measurements	3
13	Interference	6
14	Safety	2
	Total	50

AOCP AND AOLCP — SECTION M (Theory)

SYLLABUS SECTION	TOPIC	NUMBER OF QUESTIONS
1	Electrical laws and circuits	8
2	Circuit symbols	
3	Mathematics	
	Note — questions on topics 2 and 3 are included in the various subject headings	
4	Power Supplies	3
5	Semiconductors	6
6	Vacuum tubes	1
7	Oscillator and amplifier principles	2
8	Transmitters	5
9	Receivers	5
10	Antennas and transmission lines	4
11	Propagation	4
12	Test equipment and measurements	3
13	Interference	5
14	Advanced modes of transmission and reception	2
15	Safety	2
	Total	50

The above changes give effect to the desire to take more account of modern technology.

The syllabus sections covering 'Semiconductors' have been increased by one question and the sections covering 'Vacuum tubes' have been decreased by one question in the Novice, Limited and Amateur theory examinations.

In the theory Sections of the AOCP and AOLCP examinations, the syllabus section on 'Interference' has been reduced by one question with a corresponding increase of one question in the 'Advanced modes of transmission and reception' section.

—Signed: A Jordon, Radiocommunications Operations Branch, Communications Operations Division, April 19, 1988

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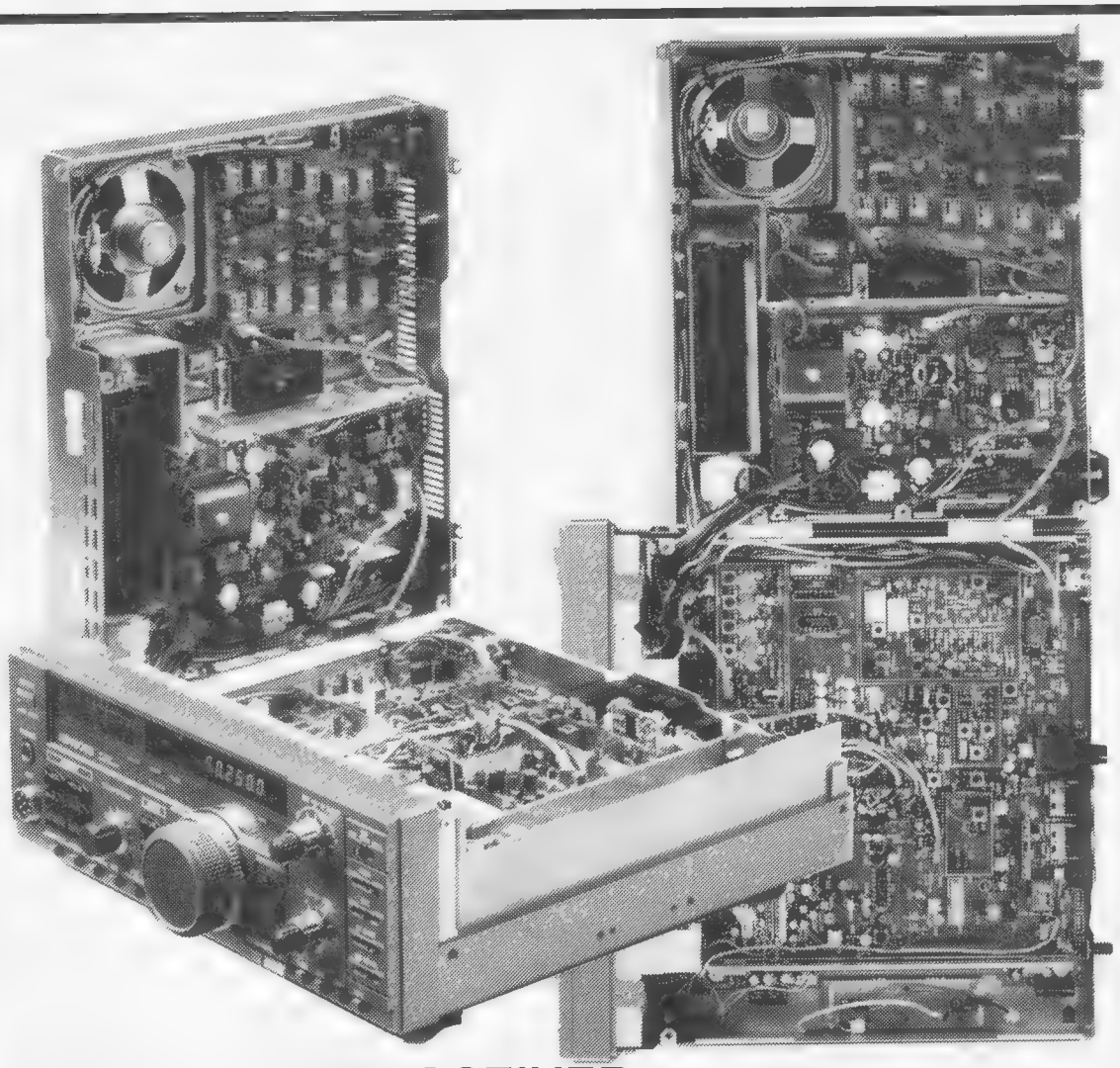

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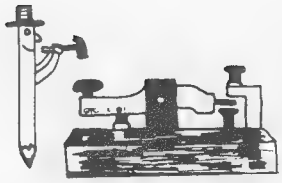


Pounding Brass

Gilbert Griffith VK3CQ
7 Church Street, Bright. Vic. 3741

Did you notice the mistake in last month's column? If you did, I hope you wrote to tell me about it.

If you want a letter answered, please enclose a self-addressed envelope, a I always answer those first. If I fail to answer immediately it usually means that I am waiting for information in order to pass it along.

Continuing from last month's episode I hope you are not more confused than you were before, because there is more to come.

FULL BREAK-IN

Essentially, full break-in is the ability to hear incoming signals between your own dots and dashes. This takes a little getting used to at first, especially if you neglect setting the equipment up beforehand. Careful control of the AGC speed, the receiver volume, as well as the volume of your own sidetone, and background noise are essentials. Practice working a strong "friendly" station with the RF gain turned right down so that the volume of the other signal is about the same as your sidetone. It should also be the same pitch. There should be little evidence of background noise when receiving until you are familiar with the operating practices anyway. If you cannot find anyone to practice with, give me a phone call some evening, but not too late please.

Much time can be saved as transmissions are concluded with a simple "BK" or "K" to let the other operator have his turn. It is amazing how much you can say in the 10 minutes or so between identifications. It can be quite exciting when there are three or more stations operating together, you can tell who is talking by their "fist" alone. Other stations have to be quick and lively if they want to sneak a comment in, which makes it much more fun!

A simple way of implementing a full break-in system is to use a separate antenna for the transmitter and (separate) receiver. A single antenna may be switched by a timed relay, but it may be preferable to leave the transmitter connected to the antenna permanently and use the relay to disconnect the receiver whilst transmitting. It is then easy to use the other relay contact to earth the receiver input. If you do not earth the receiver input, you will need to put two diodes "back-to-back" across its input, otherwise something is sure to cook. I found this out the hard way — complete with smoke!

Last week I had a letter from Lindsay VK3ANJ, who says:

"Last month I was trying to establish contact with VK7ZO on SSB. Conditions were difficult and Graham changed to CW. I replied also on CW and suggested he nominate a frequency at the CW end. His response was interferred with by a strong local sending at a laboured five words-per-minute "QSY CW end". I asked for his identification at his sending speed with the intention of enlightening him on some aspects of the legitimate use of CW. A long pause, then "QSY CW end dill. . .". "

Now, aside from the fact that if Lindsay were a true Morsiac he would have been on CW in the first place, he really did not have to QSY at all to be 'in the right' as it were.

I suspect we have all had the same sort of confrontations on air ourselves. I know I have, particularly in contests, but ours stem basically from SSBers in the Morse band sections. Anyway, Lindsay's letter prompted me into a little research on the regulations.

If you look in the current call book, page 105, you will see, interestingly, that in all the bands under 30 MHz, CW has its own segment at the bottom of the band. But it also extends across the *whole* band.

The *Amateur Operators' Handbook* revised 1978 edition, (which is the only edition I have been able to obtain since before I passed my exams) may be slightly out of date, but the regulations cannot have changed that much, states that "Transmissions without identification or with false identification are prohibited" (page 26, 6.34).

The same book also states in Appendix 2 "Wireless Telegraphy Regulations" that '50 The examination for an Amateur Operator's Certificate of Proficiency shall be such as to show that a successful candidate possesses the knowledge and qualifications specified in the Regulation, namely . . . (c) ability to send correctly, and to receive correctly by ear, in Morse code, a message in plain language at a speed of 10 words per minute.'

It also states, '50, (1) The Minister may at any time, by notice in writing, require the holder of a certificate issued under this Part to satisfy him, by examination or otherwise, within a time specified in the notice, that he possesses the knowledge and qualifications referred to in the certificate. (2) If the holder fails to so satisfy the Minister the Minister may, by notice published in the Gazette, cancel the certificate.'

I am not advocating informing on all the amateurs you know who have forgotten their Morse, they are probably in the majority anyway. But when one is harassed on air by basic ignorance, I think a call to the authorities is more than warranted. I would send a tape recording, as well!

The tried and true method of dealing with QRM is to ignore it. If you are concerned by bad operators, procedures or harassment, tape it, obtain an identification, and call the radio inspector for some action. Before you do though, I suggest a chat with the culprit first, if possible, as you can probably explain his error in a friendly manner. Isn't that what amateur radio is all about?

The most annoying thing about the amateurs who forget their Morse as soon as they get their licence, is that they do not realise what they are missing. I feel sorry or them, and who wants "contest throat" anyway?

Did I work you in the Novice Contest? Do not forget to send in your log!

73 for another month.

Gil.

ar

". . .Chap says we've got a chirpy note. . ."

ODE TO A TOWER

An Old Timer's Lament

Young amateur displayed some sense,
A ton of iron for eighteen pence!
With this he built a tower so bold,
It was amazing to behold.

Then off he went to Royal Arcade,
Where proudly once was all displayed,
At Number Five, a disposals store
Containing radio goods galore.

And here he bargained hard and fast,
Because the good bits didn't last.
He finished up with lots of loot,
And crammed it in his Chevvy's boot.

Off home once more, and in his shack
He wired it all into the rack.
With 813s in push-pull parallel,
When they were on you sure could tell!

Three thousand volts were on the plates,
In those days, mate, they weren't cheap-skates!
With all eight finals glowing bright
He gave a CQ late one night.

Three kilowatts the rig put out,
Four hundred, only, up the spout!
"CQ", he called, twas late at night,
It gave the ether quite a fright!
Yet some still think the pressure sprayer
Caused the hole in the Ozone Layer!

Slow time marched on, the years passed by,
And "Tempus fugit" is no lie.

His tower was now no longer bold
Like him, it too was growing old.
His Yagi drooped, no longer best,
A tangle like a wild bird's nest!

The tower was old, and rusty too,
And yes, it had a nasty slew!
The Council long ago has sense,
Ignored antennas at the fence.

New neighbours came, and nasty too,
They soon turned on a frightful blue!
They asked the Council round one day,
Our amateur wished they'd blow away.

The Council man just looked, and said,
"This blank old thing will hit your head!"

So now his tower's on the ground
A heap of junk, just lying round.

From iron to rust, a fact that's real,
Old amateurs last much longer than steel!

Stanley A Brunette VK3IS
Unit 44, Berwick Brae
670 Princes Highway
Berwick, Vic. 3806

(The author, whose previous call sign was VK2BRU, was at one time the proprietor of the disposals store *Reco Radio* at No 5 Royal Arcade, Sydney).

QUARTERLY AMATEUR STATISTICS as at March 1988

	1	2	3	4	5	6
VK1	2	66	30	62	228	3
VK2	12	978	377	902	3039	58
VK3	4	1097	361	738	2771	69
VK4	6	407	275	602	1643	43
VK5	2	280	138	299	1090	15
VK8	2	33	18	49	98	5
VK6	12	240	121	215	998	20
VK7	3	103	43	102	340	16
Terr	0	1	0	3	43	0
Total	43	3205	1363	2972	10250	229

The above is a breakdown of radio amateur station licences issued by the DOTC as at March 1988.

1. Beacons
2. Limited Licences
3. Limited/Novice Licences
4. Novice Licences
5. Unrestricted Licences
6. Repeaters

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

MEMBERSHIP LIST as at March 31, 1988

Charlene VK1NEJ
Kathleen VK2ACP
Betty VK2AMU
Ree VK2CAK
Dorothy VK2DDB
Norma VK2DJO
Beryl VK2DVL
Joy VK2EBX
Heather VK2HD
Joyce VK2MI
Maree VK2NKN
Nancy VK2NPG
Margaret VK2PNG
Bobbie VK2PXS
Freda VK2SU
Wendy VK2YQK
Jean Darling

Chris VK4ABN
Sandra VK4ACJ
Anne VK4ANN
Margaret VK4AOE
Jill VK4ASK
Connie VK4ATK
Dulcie VK4BDH
Betsy VK4BET
Wendy VK4BSQ
Jeanette VK4BZL
Phyl VK4CPL
Anne VK4FAB
Christine VK4KCA
Noela VK4KCU
Hazel VK4MAZ
Dorothy VK4NAM
Candy VK4NES
Valarie VK4NNJ
Mary VK4PZ
Cecily VK4QW
Josie VK4VG
Val VK4VR
Bonnie Pounsett

Lorrie VK3AGO
Rae VK3AYL
Mavis VK3BIR
Joan VK3BJB
Mona VK3BRE
Janet VK3BTU
Barbara VK3BYK
Margaret VK3CWA
Kim VK3CYL
Margaret VK3DML
Marilyn VK3DMS
Valda VK3DVT
Bron VK3DYF
Gwen VK3DYL
Jan VK3HD
Marjorie VK3HQ
Marlene VK3JAW
Liz VK3JQ
Mavis VK3KS
Joan VK3NLO
Bonnie VK3PBL
Patricia VK3PRV
Phyl VK3PYL
Clarice VK3UE
Jessie VK3VAN
Joyce VK3VBK
Kathy VK3XBA
Austine VK3YL
Jean Truebridge
Raedie Fowler
Muriel May
Jean Shaw
Margaret Hamilton
Kay Bennetts

Jenny VK5ANW
Meg VK5AOV
Sue VK5AYL
Joyanne VK5BJH
Maria VK5BMT
Vicki VK5FK
Lorraine VK5LM
Carol VK5PWA
Marlene VK5QO
Joy VK5YJ
Denise VK5YL
Christine VK5ZCQ
Pauline Koen
Gill Wardrop
Bev Tamblyn

Bev VK6DE
Helene VK6HI
Joan VK6JMP
Peggy VK6NKU
Debra VK6OJ
Inge VK6OV
Trish VK6QL
Margaret VK6QM
Jan VK6PYL
Poppy VK6YF
Gillian VK6YL
Christine VK6ZLZ
Olive Couch
Daphne Hugo
June Greenaway
Lynda Francis

Helene VK7HD
Grace VK7TN
Kirsti VK9NL
Rae VK9NXL

OVERSEAS MEMBERS

Barbara CP5LE

Aimee FK8FA

Christel DF1LV
Christa DJ1TE
Anny DF2SL

Heidi DF3LX
Margot DK5TT
Gaby DL2BCH

Sheila G3HCQ
Ann G4EYL
Diana G4EZI
Jasmine G4KFP
Cilla G4KVR

Joy G4OUZ
Sylvia G4VBT
Dee G4VFC
Angelika G0CCI
Jeanette Arter

Shirely GM4LUS
Kay GM6KAY

Anne GM4UXX
Jean GW0ARP

Santina IT9KXI

Fumi JA1AEQ
Akiyo JH1GMZ
Nanako JI1VLV

Mizuyo JE6JQC
Etsuko JA6KYP

Jean K1IJV
Karla WA1UVJ
Cathi KA1OKF
Phyllis W2GLB/7
Christine WB2YBA
Jeanne KA3CEO
Liz W3CDQ
Mary Ann WA3HUP
Ruthanna WB3CQN
Lois WB3EFQ
Edith WA4SRD
Betty KA5ONE
Mary KE5UO
Carol KK5L
Darleen WD5FQX
Karen KA5WXE
Jerrie K6INK
Joanie KA6V
Elizabeth KA6NZK

Mary KB6CLL
Maxine N6GGR
Claudia N6GZW
Joanne N6LFZ
Jessie WA6OET
Martha KA7CRO
Jean KA7SWH
Daurel KC7TE
Gerry KD7RA
Alice KD7SH
Joan KD7YB
Shirlee KQ7Y
Marion WA7TLL
Lee KB8RT
June KM8E
Shirley WD8HEV
Ann K9RXK
Kay WA0WOF

Eeva OH3ST
Marie-Jeanne ON4AYL

Zdena OK2BBI

Agnes PA3ADR
Inge PY2JY

Paula PA3DST
Rozita SM5HYL

Hallie VE6AUP
Elizabeth VE7YL
Bobby VE7CBK

Rae VE7CIX
Margaret VE7DKC
Muriel VE7LQH

Betty VR6YL

Junia YJ8NJW

Aola ZL1ALE
Celia ZL1ALK
Win ZL1BBN
Heather ZL1BBT
Clarrie ZL1BDZ
Elva ZL1BIZ
Ethel ZL1BWQ
Christine ZL1BQW
Gail ZL1FV
Vicki ZL1OC
Cathy ZL2ADK
Dawn ZL2AGX

Alma ZL2AWP
Biny ZL2AZY
Jos ZL2BAO
Marilyn ZL2BOA
Jeanne ZL2BOD
Anne ZL2BOV
Lynn ZL2PQ
Pauline ZL2QW
Pearl ZL2QY
Gail ZL2TZG
Carol ZL2VQ
Val ZL3GW

Lee ZS1YL
Diana ZS6GH

Mimi ZS5YO
Pat ZS6VC

Mary 5W1FMI

VK3 BARBEQUE

VK3 members held a barbeque at the home of Liz VK3JQ, a lovely setting with ample space, on April 17, 1988. The weather was glorious and the company excellent.

Those attending were Marjorie VK3HQ, Mavis AX3KS, Raedie Fowler, Gwen VK3DYL, Barbara VK3BYK, new member Phyl VK3PYL, Bron VK3DYF and Liz. Also in attendance were five OMs, including Liz's youngest son.

VK3HQ expressed her surprised and pleasure with the "trophy" (a little silver vase) ALARA recently presented to her to mark her 56 years "on air".

(Bron VK3DYF)

ALARA CONTEST

As part of our bicentennial celebrations this year, special contest certificates will be awarded.

To qualify:

VK operators require 200 points, and work 10 ALARA members.

DX operators require 88 points, and work five ALARA members.

BIRTHDAY ACTIVITY DAY

This year the ALARA Birthday YL Activity Day will be held on Saturday, July 23, 0400 to 1200 UTC. The normal Activity Day frequencies.

BITS AND PIECES

Sympathy is extended to Bet VK4BET, whose OM Berney VK4FOS passed away recently.

We were saddened to learn that Daphne Hugo, a VK6 member, passed away on April 23. Our sympathy to her family and VK6 friends.

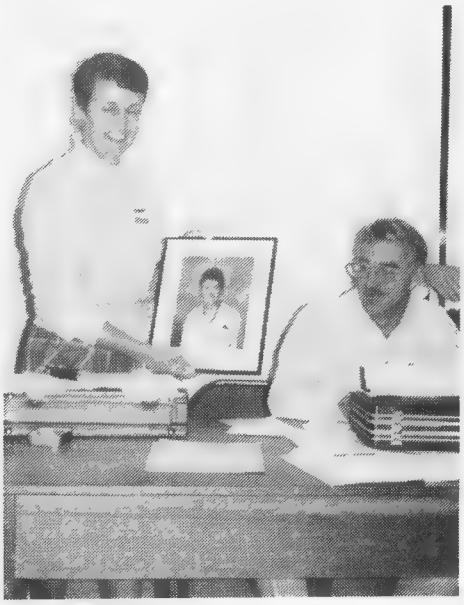
Beryl, formerly VK2DVL is now VK2BBM.

Congratulations to Christine VK6ZLZ, now VK6 WIA Divisional President.

The YLRL Convention will be held in Hawaii in June 1989. Good location for those who can make it.

Bev VK6DE, came on the 222 Net on May 9, using the special call sign AX6YG. The occasion was the Travelling Australian Bicentennial Exhibition, in Geraldton.

Jenny VK5ANW, recently retired as VK5 Divisional President. On her last night in that position, a photograph, taken too commemorate the first lady president, was displayed, and Alan VK5NNM, spoke in appreciation of Jenny's contribution to the South Australian Division. The photograph of Jenny will be hung permanently at the Divisional Headquarters.



Jenny VK5ANW, at her last VK5 meeting as President.

KYOPELIVNON — 88 AWARD

It would appear that our OH counterparts are doing their bit to keep the amateur radio flag flying! In addition to YL meetings in different parts of the country, July is the month they hold their Radio Amateur League Summer Camp. They intend to work the bands with special call signs, OH2YLS and OG2YLS.

This information was supplied by Eeva OH3ST, who also gave some details of a new YL-88 Award.

Unfortunately the English is not very clear, but the rules seem to be that OH stations are required to work 88 YL stations, any band or mode, all other stations require 33 YL stations, any band or mode, during 1988. Cost is three IRCs. Log data (call sign, name, date, band) to: Eeva Kolvula OH3ST, Suksitie 16, 15880 Hollola, Finland.

Hopefully more precise details will be available in time for next month's AR.

YL Summer Meeting, Kuopio 1987. From left: OH2DL, OH5MX, OH7YL, OH2IO, OH7XX, OH3ST, OH2BYL/7LP.

The translation of Kyopelivnon, according to Eeva, is *The place where people say that witches get together to celebrate.*

I don't know whether it loses something in the translation, but it does seem a rather strange name for a YL award! I assume the OH ladies considered it appropriate, and don't intend to call for comments from our VK OMs!

NEW MEMBERS

Welcome to VK members: Cathy VK4CEK and Sally Ingram (VK4). Also DX members: Santina IT9KXI, Hiromi JJ1CAS, Phillipa ZL2CAV and Anne ZL3VR.

73/33 until next time,
Joy VK2EBX

ar

QSLs FROM THE WIA COLLECTION

Ken Matchett VK3TL
PO Box 1, Seville, Vic. 3139

The QSLs, GB3CJC and GB2SM, are those of what are called "Special Event Stations". In general, the call letters of the stations stand for the event itself.

In the case of these two stations, Captain James Cook (CJC) and Science Museum (SM). Such special calls are issued by the Radio Society of Great Britain (RSGB) and as their name suggests, celebrate or advertise usually some important event such as a hobby exhibition, an anniversary, a sporting event or a scout jamboree. In these cases, the licence is granted on the condition that the station is open to the public, is of general interest to amateurs or serves to publicise an important event. Special event call signs are normally issued to individuals for s specified time, it being required to operate such a station under the terms of the type (or grade) of license held by that person who is responsible for the station's operation. Several hundred special event call signs employing a variety of prefixes have been issued such as:

GB2NAH (North Area Hobbies Exhibition)
GB2RPF (Runicorn People's Festival)
GB3FB (Festival of Britain 1951)
GB4CFB (Cheshire Fire Brigade)
GB9DB (900th Anniversary of the Doomsday Book)

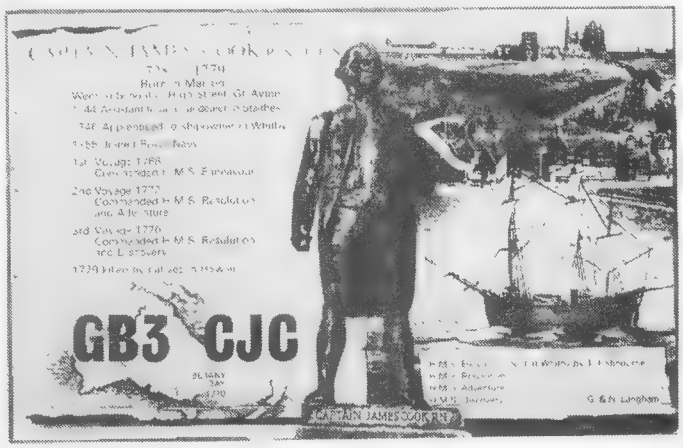
The uncommon GB0 prefix has also been used on a few occasions; eg GB0BRN (Silver Jubilee celebration by the Royal Naval Amateur Radio Society). A special event call sign has even been used to celebrate a private firm's anniversary; eg GB2IBM (IBM UK Laboratories). They have also celebrated royal occasions such as the investiture of HRH the Prince of Wales in 1969 (GB2HRH) and the Silver Jubilee of HM Queen Elizabeth II.

Some of the special event stations have what is called "Permanent (Special) call signs". The call GB2SM is one of oldest in this category. The 1965 edition of the RSGB Call Book lists only eight special (GB) calls amongst them GB2SM, all but one of the remaining seven being calls of the Radio Society of Great Britain or related stations. Station GB2SM is situated in the Science Museum at Kensington, London. It is a demonstration station at which licensed amateurs may take part in its operation. This reflects the philosophy of the museum itself which is to encourage viewers' participation in the operation of the many varied exhibits.

It seems fitting in this Bicentenary year to comment on the QSL GB3CJC. The station is a far more modern one than GB2SM, and attempts to trace the discovery voyages of James Cook over the air waves rather than by sea, to contact stations in those countries which he once visited.

Captain James Cook RN FRS, was born in Marton, Middlebrough, England in 1728 and died tragically in Hawaii during his third voyage in 1779, but his direct involvement with Australia was confined to an earlier voyage along Australia's east coast in the barque *Endeavour* in 1770. The station GB3CJC is operated by members of the Middlebrough Post Office Amateur Radio Club and is based in the Captain Cook Birthplace Museum situated only a few metres from the site of Cook's birth. The station was first operated on October 27, 1978, marking the 250th anniversary of Cook's birth and the opening of the new museum.

ar



TECHNICAL MAILBOX

After reading the write-up on the TS-440S in the Equipment Review section of the July 1986 issue of Amateur Radio, I decided to go ahead and purchase the transceiver. Its performance lives up to all the expectations mentioned in the review and I am entirely satisfied.

However, since the day I purchased it in February 1988, I have noticed a rather annoying click in the loudspeaker every so often (every 20 seconds or so) and the pointer of the S-meter kicks up-scale at the same time, on all bands, particularly on the 80 metre band, even with the Noise Blanker in circuit. Sometimes the click would blanket a weak signal and the S-meter would kick up-scale almost to half-scale. Even with a short piece of wire as an antenna, I still get these clicks and kicks. Turning a light switch on and off does not seem to be the cause.

I pointed out this problem to the agent from whom I purchased the transceiver and he advised me to have it checked by the authorised Warranty Service Agent, which I did, but they "found no fault". However, the problem still remains.

I wonder if any other readers who own a TS-440S have experienced a similar problem. I would appreciate any comments.

—K E C Gillon VK6ZA

The above letter has been included in the *Technical Mailbox* with the view that someone else may have experienced the same problem with their TS-440S and may be able to help.

When I first read the letter, and noting that the Warranty Service Agent found no fault, I immediately believed that the effect was caused by an external (to the transceiver) noise source.

The first step would naturally be to define if the noise is external or internal to the transceiver. Totally removing the antenna should be a good guide although such interference could well enter the transceiver via the mains. Probably the acid test, and most simplistic at that, would be to substitute your transceiver with one of your local amateur friends.

If the noise is still evident with another transceiver then start looking for a device that is cycling on and off at about a 20 second rate! A portable radio, preferably with shortwave, will aid in localising the area. If it is not in your backyard, then call for help from DOTC. It will be of considerable help to that Department if you can arrive at an approximate location of the noise source.

Conversely, should you conclusively prove the noise to be in the transceiver, then take the rig back to the Service Agent and make the appropriate noises! Should the warranty have expired (as has most likely happened) then you have a debate on your hands! If you are willing to attempt to fix the problem (or even isolate it to an area for the Service Agent to fix), then consult the handbook!

I have had a browse over the circuit, and not wishing to take up too much space here, it should be a fairly easy task to isolate the respective stages backwards from the S-meter circuit. From the layout, it appears many points are available to achieve this without even unsoldering wires. It is possible, of course, that the problem may well be in the power supply or AF stages (a capacitor breaking down). It is up to you how far you wish to go! At least the problem is consistent and you should be able to tackle it with a degree of confidence. The intermittent ones are a different story!

Let us know the outcome.

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

AWARDS ISSUED IN APRIL 1988

DXCC CW

132 Casey W Schreuder VK2CWS

WAVKCA

1576 Sampurno YC0BYW
1577 Olaf Sundin SM4BOI
1578 David L Levy KI4GV
1579 Shigeru Okazaki JH2ORJ
1580 Rumen Stefanov LZ2RS
1581 Radio Club "Jan Hus" YU2CCY
1582 Gene A Leis WR6P
1583 Harry Burhans W3FM
1584 Alan J Penney VE6LQ
1585 Thomas Freimann Y24PM
1586 Jarda Semotan OK1RD
1587 Yoshio Obuchi JE6MGR
1588 Minoru Nagata JA5EYW

WAS (VHF)

175 Lionel K Curling VK3NM 144 MHz

DXCC UPDATES

VK7YP 124 phone
VK4LC 310/345 phone

VK2 AWARDS — 1988

From the beginning of 1988, the New South Wales Division introduced a range of awards. It is some time since the Division had an awards program. The major award for 1988 is the Bicentenary of Australia — 1788-1988. It is valid from January 1, 1988 and concludes at midnight on December 31, 1988. Claims must be lodged by June 30, 1989. The object is to work and log 200 different VK2 contacts.

Other awards are *The Worked All New South Wales* by way of contacts in the various cities, municipalities and shires of New South Wales. The NSW National Parks Award, includes National Parks, State Recreation Areas and Historic Sites. For those who may not be able to work the full number required in the major awards, they may apply for the 25s Award. This is a one time, non-endorsement award.

There is still some work to be done on the VK2 Awards booklet, but basic rules, forms etc, are available from the VK2 Divisional Office. Please include two 37 cent stamps to offset postage and production costs. Later in the year the final version of the awards booklet will be available.

The Awards Manager is Col Stevenson VK2CS, WIA NSW Division, PO Box 1066, Parramatta, NSW. 2150.

Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Thought for the month: with 20 watts of RTTY into a dipole, one must be patient!

Many reports were received for March last, with contributions made by: VK2s ADL, CS, DEJ, EYI; VK3s AMD, DID, OJ, XB; VK4s ADY, AKX, BG, NHJ, BTW, IS, KHZ, YG; VK5s GZ, TL; VK7RH; VK8s ATK, HA, JF. Thank you one and all for your efforts.

There were 475 intruders using AM mode reported, with the bulk of these being Asian stations on **our** 10 metre band. Of these, 146 intruders were heard using CW; 338 using RTTY; 144 were using other modes (R7B, B9W, N0N, P0N, etc). And, 34 intruder stations had the cheek to send their call signs. Reports are now coming in on 15 metres, which have been absent for quite a while. Seems 21 MHz is coming good. (At least for the intruders!).

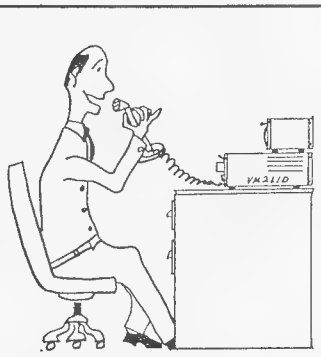
The United States Federal Communications Commission (FCC), acting on input from the United States Intruder Watch (Amateur Interference Reporting System — AIRS) has sent telexes to the Soviet Minister of Post and Telecommunications and to the International Frequency Registration Board (IFRB) seeking assistance in eliminating harmful interference to the Amateur Radio Service. The Russian interference was on 7.025 and 7.070 MHz, and the subject of the telex to the IFRB was Radio Tirana, Albania, operating on 7.065 MHz. During March, the AIRS filed the results of 372 reports on non-amateur-to-amateur interference with the FCC Treaty Branch, in Washington, DC. Included in these reports were five-character coded groups which plague the amateur radio frequencies world-wide.

Let us continue to support the Ws and other Intruder Watch services around the world in their efforts to clean up **our** bands.

See you next month, and I hope you are getting more DX than I am!

73 de VK2COP

Acknowledgments: VK3PC, The ARRL Letter



"OK — I've got one QSL card left — Who wants it? ! ?"

—VK2COP

Electro-Magnetic Compatibility Report

Hans Ruckert VK2AOU
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

A LAW IS ONLY AS GOOD AS ITS POLICING IS EFFECTIVE!

The West German government has attempted to protect the unsuspecting customer who wished to buy electronic entertainment equipment, from obtaining equipment which did not meet the susceptibility standards considered necessary and fair by all parties concerned.

The customer finds, on unpacking the apparatus, a letter from the German Post Office (FTZ in DL is the same as the DOTC in VK) document 478/1981, 69/1981, which states to the effect:

"Dear radio listener/television viewer!

1. This equipment has been permitted to be purchased and used for the reception of radio and television signals.
2. The equipment must only be used to receive broadcast sound and television signals within West Germany. It is illegal to listen to police, sea-radio and mobile land radio stations.
3. Marking with the FTZ Test Number offers you the guarantee that this equipment does not interfere with other telecommunication services including radio services. Marking with the letters "S" or "SK" beside the FTZ Test Number indicates that this equipment is largely immune against disturbance by other radio services (eg amateur radio and CB radio). Please contact the local Radio Disturbance Measuring Office if, in special circumstances, disturbance occurs."

COMMENT:

Disturbance is caused by lack of immunity of a piece of equipment from licenced transmissions affecting it.

Interference is caused by illegal transmissions. (See also *Amateur Radio* April 1983, page 60).

SO FAR THE LAW, BUT WHAT ABOUT POLICING ITS EFFECTIVENESS?

The following is translated from cq-DL *September 1987, pages 549 to 550.*

Electronic entertainment equipment does not comply with the S or SK standard! One was anxious to learn about further tests by the consumer goods testing organisation (Stiftung Warentest) after the initial devastating results of the July test of Hi Fi equipment. Were the devices tested rare substandard examples or did they represent a generally bad standard of this type of electronic equipment?

Unfortunately, no better results could be reported. The testing authority stated that the nine tested Hi Fi combinations (tuner, amplifier, turntable, tape-deck, etc) offered generally good Hi Fi quality, but the immunity standards laid down by the FTZ were only met by a few examples. We will not go into detail here, but the tests showed clearly which equipment would be on the preferred list of any radio amateur shopping for equipment. There appear to be some manufacturers who have their immunity efforts under control, if one compares the two test reports. Products with bad susceptibility, on the other hand, come from the same manufacturer if both test results are compared.

cq-DL asked for comment from all manufacturers concerned. No replies have so far been received (September 1987). Also, the FTZ has also been silent, which seems to be typical for our problem. (There are only a few thousand radio amateurs involved!).

The fact that other radio services are also affected, to an ever increasing degree, is apparently overlooked. One reply was very quickly received at the DARS Headquarters (Baunatal, near Kassel). The Association of Consumer Organisations reacted promptly and placed the blame correctly.

THE INCOMPLETE FTZ REGULATIONS

The consumer pays! Very few areas of the consumer field have been covered with so many laws and regulations and technical specifications, as those for electronic equipment. The unsuspecting customer thinks that everything is covered such as radio frequencies on which listening is permitted, the requirement of reporting home computers, operating permission for antenna preamplifiers and the sale prohibition of certain transmitters. But the confidence of radio listeners and television viewers in the laws and regulations is lost, as son as the television picture starts to flicker during an important soccer game, or the expensive Hi Fi amplifier brings the greetings of the radio amateur next door.

Unfortunately, these disturbances are not rare, and they are not as funny as it may seem for the affected persons — the transmitter operator and the unwilling receiver owner! It is also not unusual that these cases are finally decided in a court of law. The surprise and anger of the affected radio listener are especially great, when he discovers, too late, that the dealer was permitted to sell the receiver, the use of which was, on the other hand, not permitted due to some regulation. For several years, the Consumer Organisation has claimed this is an impossible situation. The law maker has, in the meantime, closed this gap for transmitters.

There is nothing to stop the trade from selling unauthorised equipment, The law maker still places the entire responsibility on the layman, a condition which is severely criticised by the Consumer Organisation. It is difficult for the owner of a Hi Fi set, or television receiver, etc, to understand that his equipment is not sufficiently immune to legal transmissions, despite the testing sign and the "S" classification. The recent consumer product test of the Consumer Association (Warentest) again showed that one cannot rely on testing marks, which had been sought as a customer assistance. This unsatisfactory condition, criticised for years, is a direct result of the never ending arguments of industry and trade on one side, and the resistance of the radio amateurs and the consumer organisations on the other. One is afraid that this situation is likely to worsen in the near future when the Commission of the European Common Market countries adopts susceptibility limits and testing methods for radio receivers and other connected equipment (EN55020), which are less effective than the DIN VDE standards. One can then expect an increase of disturbance reports, and the FTZ will then see that the consumer in Germany and the other EG countries were not assisted by unsuitable regulations. It is clear that consumers especially will suffer as well as the radio amateur, until standards are *adopted and policed,* which are in line with the actual technical conditions. The industry and the FTZ is to be blamed for this. *cq-DL* will report on the answers to these questions as soon as they arrive from the FTZ and the equipment manufacturers.

(end of translation)

In recent years, we had the following situation:

If a neighbour complained to DOTC that his reception was affected by a nearby radio amateur, the radio amateur was likely to be blamed if the receiver of the neighbour carried the immunity test letters "S" or "SK". It was assumed that equipment carrying these letters did actually comply with the susceptibility standard. The tests published by the Consumer Association showed that this may not be so, and injustice was done to the radio amateur. This is why the DARC (equivalent to the WIA) fought a long battle with the FTZ recently, to ensure that the radio inspector ignores the "S" classification and instead uses a television set or radio receiver which is known to be so designed and tested that the immunity standards are met. This receiver could be placed alongside that of the complaining customer, and the radio amateur would only be blamed if this correct FTZ receiver was also affected!

Such a demonstration is the most effective way to show a complainant that the design of his equipment is at fault. Both the manufacturer and inadequate policing of the law are responsible, allowing the unsuspecting customer to buy equipment which does not comply with the wrongly indicated standard of immunity. In this case the radio amateur should not be blamed, nor his operation restricted.

Tests by DL1BU showed that the old and simple TRF receivers of the 1933 and 1938 period "VE-301 w" and "DKE" showed more immunity than most modern electronic entertainment equipment. Hi Fi combinations of the following manufacturers were tested last year by the Association of Consumer Organisations:

ITT, Graetz, Fisher, Kenwood, Sanyo, Sony, Sharp, JVC, Denon, Grundig, Dual, Sansui, Yamaha, Saba, Onkyo, Marantz, Telefunken, Luxman, Pioneer, Philips.

Some equipment radiated RFI by itself, causing active interference, whilst others had far too little immunity. Some equipment was already affected by local radio stations (non-amateur).

Concern was also voiced by a member of the Federal German Parliament, Gerhard O Pfefferman (CDU), when he addressed the visitors at *Ham Radio 1987,* which was held at Friedrichshafen (there were about 15 000 visitors from various countries). Mr Pfefferman stated that the customers, as well as the radio amateurs, are not sufficiently protected from buying equipment of low quality or performance. The FTZ tests only one prototype, which is not necessarily a representative sample compared with the mass-produced equipment of this type. The Consumer Association also tested one set per maker and found that, in seven cases out of 12, the immunity standards, which should have been met to earn the "S" or "SK" certifications were not met.

We can learn from this situation in West Germany. Laws and regulations which are not effectively policed are worse than no laws at all. They are misused by those who attempt to be "smarter" than the authorities, to the detriment of the public.

CANCER LINK

The American Radio Relay League has responded to recent news media reports of a possible relationship between amateur radio and health hazards.

The ARRL board adopted a resolution emphasising its continued support of legitimate investigations in this field, while at the same time deploring inaccurate and capricious assessments of scholarly work that have appeared in the media.

The ARRL said the reports had caused "unfounded anxiety and concern" among radio amateurs.

The reports said research had found a significantly higher than normal incidence of several kinds of cancer in radio amateurs due to prolonged exposure to electro-magnetic radiation.

AMSAT Australia

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA. 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATIONS NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC Sunday
Primary Frequency: 3.685 MHz
Secondary Frequency: 7.064 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements, from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

AMSAT-AUSTRALIA NEWSLETTER
This fine monthly publication is published on behalf of AMSAT-Australia by Graham VK5AGR, and now has 300-plus subscribers. Should you also wish to subscribe, send a cheque for $20, made payable to AMSAT-Australia, and post it to: AMSAT-Australia, C/- PO Box 2141, GPO, Adelaide, SA. 5001.

The newsletter provides the latest news items on all satellite activities and is a must for all those seriously interested in amateur satellite activities.

PHASE-3C (OSCAR-13) TO BE LAUNCHED JUNE 8
Historically, this item will be very old news by the time this column reaches readers. All being well, OSCAR-13 will now be in orbit and about to be placed into general operations. However, this plan of operations will, no doubt, be subject to change depending on a host of post-launch criteria.

Notwithstanding, the following Specification Sheet, prepared by AMSAT-NA, is presented for information.

PHASE-3C LAUNCH CAMPAIGN INFORMATION KIT SPECIFICATIONS
Rev 2.0 April 2, 1988
WA2LQQ

In three parts:
Part 1: Phase 3 Spacecraft Specifications
Part 2: User Station Requirements
Part 3: Ariane 4 Launcher Characteristics and Launch Site Information

The following preliminary specifications represent the latest known values for Phase-3C. However, it is understood and assumed some values will change as better values are obtained or as system changes are made either by intent or by natural processes inherent in component aging, temperature changes, etc.

PART 1: PHASE-3 SPACECRAFT SPECIFICATIONS

1.0 Power system
1.1 Solar arrays 50 watts at start of life rolling off to about 35 watts after three years, depending on various factors.
1.2 Batteries: Primary rated at 10 Ah: auxiliary rated at 6 Ah.
1.3 Regulation by a Battery Charge Regulator (BCR).

2.0 Attitude Control and Stabilisation
2.1 Type: Spacecraft is a spinner; spins on Z-axis at 10-60 rpm.
2.2 Control: Attitude and spin rate adjusted magnetically by generation of torque through interaction of on-board pulsed electro-magnets (magnetorquers) and geo-magnetic field.
2.3 Attitude determination and spin rate detection by two sun sensors (cross slits) and earth sensor inputs to computer.

3.0 Integrated Housekeeping Unit (IHU)
3.1 Operating System: Multi-tasking computer running IPS system.
3.2 CPU: 1802 COSMAC.
3.3 Memory:Harris HS-6564RH radiation hardened memory totalling 32 kBytes of error correcting memory (48 kBytes total).

4.0 Propulsion
4.1 On-board perigee kick motor (PKM) comprising a liquid fuelled, bi-propellant rocket engine.
4.2 Thrust: 400 N.
4.3 Specific Impulse: 293 seconds.
4.4 Delta V anticipated with 142 kilograms spacecraft: 1480 m/s.
4.5 Fuel: Aerozine 50: a 50 percent blend of unsymmetrical dimethyl hydrazine (UDMH) and hydrazine.
4.6 Oxidizer: Nitrogen tetroxide (N202).
4.7 Ignition system: none: hypergolic (self-igniting) fuel employed.
4.8 Pressurisation: Helium: 400 Bars high side: 14 Bars low side.

5.0 Transponders
5.1 Mode B: 150 kHz wide inverting linear transponder.
5.1.1 Frequencies.
5.1.1.1 Uplink: 435.420-435.570 MHz.
5.1.1.2 Downlink: 145.975-145.825 MHz
5.1.1.3 Beacons: General 145.812 MHz: Engineering 145.985 MHz.
5.1.2 Receive system characteristics.
5.1.2.1 Effective system noise temperature: ? ? ? K (NF = ? ? ? dB).
5.1.2.2 Figure of merit: ? ? ? dB/K (with antenna gain of 9.5 dBic).
5.1.3 Transmitter characteristics.
5.1.3.1 Power output: 17 dBW (50 W) PEP: 11 dBW (12.5 W) average.
5.1.3.2 Intermodulation ratio (NPR method): -23 dBr.
5.1.3.3 Downlink EIRP: 23 dBW (200 W) PEP: 17 dBW (50 W) average (with 6 dBic gain).
5.1.3.4 Downlink 3 dB beamwidth: Approximately 100 degrees.

5.2 Mode JL: 290 kHz wide inverting linear transponder.
5.2.1 Frequencies.
5.2.1.1 Uplinks
:1) Mode L: 1269.620-1269.330 MHz.
:2) Mode J: 144.425-144.475 MHz.
:3) RUDAK: 1269.710 MHz.
5.2.1.2 Downlinks
:1) Mode L: 435.715-436.005 MHz.
:2) Mode J: 435.990-435.940 MHz.
:3) RUDAK: 435.677 MHz.
5.2.1.3 Beacon: General 435.651 MHz.
5.2.2 Receive system characteristics.
5.2.2.1 Effective system noise temperature: 260 K (NF = 2.8 dB).
5.2.2.2 Figure of merit: -12 dB/K (with antenna gain of 12.2 dBic)
5.2.3 Transmitter Characteristics.
5.2.3.1 Power output: 17 dBW (50 W) PEP: 11 dBW (12.5 W) average.
5.2.3.2 Intermodulation ratio (NPR method): -23 dBr.
5.2.3.3 Downlink EIRP: 26.5 dBW (446 W) PEP: 20.5 dBW (111 W) average (with 9.5 dBic).
5.2.3.4 Downlink 3 dB beamwidth: 67 degrees.

5.3 Mode S: 36 kHz wide hard limiting transponder.
5.3.1 Frequencies.
5.3.1.1 Uplink: 435.601-435.637 MHz.
5.3.1.2 Downlink: 2400.711-2400.747 MHz.
5.3.1.3 Beacon: 2400.325 MHz.
5.3.2 Receive system characteristics.
5.3.2.1 Effective system noise temperature: (?) (Same as Mode B 70 cm receiver).
5.3.2.2 Figure of merit: ? ? ? dB/K (with 9.5 dBic antenna gain).
5.3.3 Transmitter characteristics.
5.3.3.1 Power output: 0.97 dBw (1.25) watts continuous.
5.3.3.2 Downlink EIRP: 14 dBw (25 W) with 13 dBic antenna gain.
5.3.3.3 Downlink 3 dB beamwidth: 45 degrees.

5.4 RUDAK.
5.4.1 Frequencies.
5.4.1.1 Uplink: 1269.710 MHz.
5.4.1.2 Downlink: 435.677 MHz.
5.4.2 Receive system characteristics.
5.4.2.1 Effective system noise temperature: 260 K (NF = 2.8 dB).
5.4.2.2 Figure of merit: -12 dB/K.
5.4.3 Digital rates.
5.4.3.1 Uplink: 2400 bps bi-phase PSK (BPSK) with 7.5 kHz RF capture range.
5.4.3.2 Downlink: 400 bps BPSK or 1200 bps NRZI.
5.4.3.3 Protocol: AX.25 version 2.

6.0 Antenna Systems
6.1 Two metre antennas.
6.1.1 Two metre high gain array.
6.1.1.1 Type: ZL special: three phased two-element beams.
6.1.1.2 Gain: 6.0 dBic.
6.1.1.3 3 dB beamwidth: 100 degrees.
6.1.1.4 Polarisation:RHC.
6.1.2 Two metre omni: monopole.
6.1.2.1 Type: Monopole.
6.1.2.2 Gain: -2.0 dBi.
6.1.2.4 Polarisation:Linear.

6.2 70 centimetre antennas.
6.2.1 70 centimetre high gain array.
6.2.1.1 Type: Three phased dipoles over ground.
6.2.1.2 Gain: 9.5 dBic.
6.2.1.3 3 dB beamwidth: 67 degrees.
6.2.1.4 Polarisation: RHC.
6.2.2 70 centimetres omni.
6.2.2.1 Type: Monopole.
6.2.2.2 Gain: -2.0 dBi.
6.2.2.3 Beam Pattern: Toroidal concentric with Z-axis.
6.2.3.4 Polarisation: Linear.

6.3 24 centimetre antenna
6.3.1 Type: Five turn helix.
6.3.2 Gain: 12.2 dBic.
6.3.3 3 dB beamwidth: 49 degrees.
6.3.4 Polarisation: RHC.

6.4 13 centimetre antenna.
6.4.1 Type: Six turn helix.
6.4.2 Gain: 13.0 dBic.
6.4.3 3 dB beamwidth: 45 degrees.
6.4.4 Polarisation: RHC.

7.0 Orbital Characteristics (at separation from launcher)

7.1 Geosynchronous Transfer Orbit (GTO).
7.1.1 Perigee Altitude: 222.504 kilometres.
7.1.2 Apogee Altitude: 36 076.636 kilometres.
7.1.3 Inclination: 9.997 degrees.
7.1.4 Argument of Perigee: 178.148 degrees.
7.1.5 Ascending Node Longitude: -135.541 degrees/lift-off.
7.1.6 True Anomaly: 127.554 degrees.
7.1.7 Epoch: Instant of Separation (L +4797.1 seconds).
7.1.8 Spin rate at deployment: 29.47 degrees per second.
7.1.9 Separation velocity: 0.590 metres per second.

7.2 Objective Phase 3C Orbit (Final orbit after two or three burns).
7.2.1 Apogee: 36 000 kilometres.
7.2.2 Perigee: 1 500 kilometres.

7.3 Inclination: Approximately 57 degrees.
7.4 Argument of perigee: 178 degrees (determined by launcher).
7.5 Anomalistic period: Approximately 662.4 minutes.
7.6 Longitude increment: Approximately 184.5 degrees east per orbit.

8.0 Physical Characteristics

8.1 Size.
8.1.1 Diameter (including antennas) 2.00 metres.
8.1.2 Height: (including antennas) 1.35 metres.
8.2 Mass: 142 kilograms fully fueled.
8.3 Mass: (After kick motor firing) 92 kilograms.

9.0 Major Subsystems.
9.1 Integrated Housekeeping Unit (IHU).
9.2 Battery Charge Regulator (BCR).
9.3 Liquid Ignition Unit (LIU).
9.4 Propellant FLow Assembly (PFA).
9.5 Mode JL (L) Transponder.
9.6 Mode B (U) Transponder.
9.7 Mode S Transponder.
9.8 RUDAK Transponder.
9.9 Sensor Electronics Unit (SEU).
9.10 Sun Sensor.
9.11 Earth Sensors.
9.12 Solar Arrays.
9.13 Perigee Kick Motor (PKM).
9.14 Propellant Tank System.
9.15 Helium Bottle.
9.16 Antenna System.
9.17 Magnetorguers.
9.18 Batteries.
9.19 Safe/Arm System.
9.20 Solar Energy Research Institute (SERI) Experiment.

PART 2: USER STATION REQUIREMENTS

1.0 Mode B

1.1 Uplink requirements.
1.1.1 Frequency: 435.420-435.570 MHz.
1.1.2 EIRP: 21.5 dBW for 20 dB peak and 10 dB average SNR on downlink.
1.1.3 Polarisation: RHC.

1.2 Downlink Requirements.
1.2.1 Frequency: 145.975-145.825 MHz plus GB at 145.812 plus EB at 145.985 MHz.
1.2.2 Polarisation: RHC.
1.2.3 Minimum recommended antenna gain: 10 dBic.
1.2.4 Maximum receive system effective noise temperature: 625K (NF = 5.0 dB)
1.2.5 Minimum figure of merit: -18 dB/K.

2.0 Mode JL

2.1 Uplink requirements.
2.1.1 Frequency:
Mode L: 1269.620-1269.330 MHz.
Mode J: 144.425-144.475 MHz.
2.1.2 EIRP:
Mode L: 25 dBW for 20 dB peak and 10 dB average SNR on downlink.
Mode J: 25 dBW for 20 dB peak and 10 dB average SNR on downlink.
2.1.3 Polarisation: RHC.
2.1.4 Suitable uplink components:
Mode L: 10 watts to 15 dBic gain antenna.
Mode J: 20 watts to 12 dBic gain antenna.

2.2 Downlink requirements.
2.2.1 Frequency: 435.715-436.005 MHz plus GB at 435.651 MHz.
2.2.2 Polarisation: RHC.
2.2.3 Minimum recommended antenna gain: 13 dBic.
2.2.4 Maximum receive system effective noise temperature: 290K (NF = 3.0 dB).
2.2.5 Minimum figure of merit: -12 dB/K.

3.0 Mode S

3.1 Uplink requirements.
3.1.1 Frequency: 435.601-435.637 MHz.
3.1.2 EIRP: Approximately 27 dBW under average Mode B AGC conditions.
3.1.3 Polarisation: RHC.
3.1.4 Suitable uplink components: 25 watts to 13 dBic antenna.

3.2 Downlink requirements.
3.2.1 Frequency: 2400.711-2400.747 MHz plus beacon at 2400.325 MHz.
3.2.2 Polarisation: RHC.
3.2.3 Minimum recommended antenna gain: 28 dBic.
3.2.4 Typical antenna: 1.4 metre dish assuming 50 percent efficiency.
3.2.5 Maximum receive system effective noise temperature: 290K (NF = 3.0 dB).
3.2.6 Minimum figure of merit: +3 dB/K.

4.0 RUDAK

4.1 Uplink requirements.
4.1.2 EIRP: 26 dBW (400 watts EIRP).
4.1.3 Typical suitable uplink: eight watts to 17 dBic antenna.
4.1.4 Polarisation: RHC.

4.2 Downlink requirements.
4.2.1 Frequency: 435.677 MHz.
4.2.2 Typical receive antenna gain: 10 dBic for 12 dB Eb/No ratio.
4.2.3 Polarisation: RHC.

PART 3: ARIANE 4 LAUNCHER CHARACTERISTICS AND LAUNCH SITE INFORMATION

1.0 Launcher, General
1.1 Model Ariane 4.
1.2 Flight V-23: first demonstration flight of the Ariane 4 launcher.

2.0 Ariane 4 Capabilities.

2.1 To GTO: 4200 kilograms.
2.2 To heliosynchronous (800 kilometres): 4500 kilograms.
2.3 To LEO (200 kilometres): 8000 kilograms theoretical: limited by structural design.
2.4 Escape orbit: 2600 kilograms.
3.0 General Specifications: Ariane 4, Configuration 44LP.

3.1 Configuration 44LP: Two liquid strap-ons: Two solid strap-ons.
3.2 Mass to GTO: 3700 kilograms.
3.3 Height: 58.4 metres.
3.4 Approximate lift-off mass: 471 metric-tons.
3.5 First stage: L220: height 23.22 metres: diameter 3.8 metres: Delta V = ~3100 m/s.
3.5.1 Four Viking V engines.
3.5.1.1 Thrust (each engine): 668 kN : 750 kN in vacuum.
3.5.1.2 Specific Impulse: 248 seconds: 278 seconds (vacuum).
3.5.1.3 Burn time: 206 seconds.
3.5.1.4 Chamber pressure: 58.5 bars (abs).
3.5.1.5 Propellant system: 226 metric tons of N204 plus UH25.
3.5.2 First Stage Liquid Strap-Ons.
3.5.2.1 Two VIking VI Engines.
3.5.2.2 Thrust (each engine): 661 kN: 750 kN in vacuum.
3.5.2.3 Specific Impulse: 248 seconds: 278 seconds (vacuum).
3.5.2.4 Burn Time: 143 seconds.
3.5.2.5 Propellant System: 39 metric tons of N202 plus UH25.
3.5.2.6 Dimensions: Height 19 metres: diameter 2.22 metres.

RECENT INFORMATION OF FO-12 AND OPERATING SCHEDULE

More than a year and half have passed since the amateur satellite JAS-1/FO-12 was launched. Radio amateurs world-wide welcomed the satellite and it has now been well used. Initially, period, only the linear translator worked as mode JA, but since June 1987, mailbox, Version 0.0 has become available as mode JD.

The mailbox has been improved up to the current Version 1.11. Because of the tight power conditions of FO-12, parallel running of both JA and JD is impossible, so they are operating alternately for the time being.

FO-12 is characterised by a function of store and forward system of messages in the packet. How many stations are active on the space packet? According to the users lists obtained, about 300 stations have been counted.

It is impossible to estimate the exact number of packeteers throughout the world, but it may, at least, amount to 30 000 referring to the number of TNCs sold so far. This means that only one percent of these are space packeteers on the whole, but hopefully this will increase.

There have been many interesting messages in the mailbox. There are many personal greetings across the world, information of AO-10, discussions on packet, Christmas messages, etc. One can send messages to anywhere in the world via FO-12, although not in real-time.

Generally, FO-12 is in good working condition, although there is a slight deterioration in the storage battery. In attempt to lengthen the life of the satellite, operation of transponders has been limited.

OPERATION GUIDE OF FUJI-OSCAR 12

Present transponder operation is as follows:

1. There are three modes of operation:
mode JA — for analog QSO (SSB phone, CW).
mode JD — for digital (packet) communication.
mode DI — digital system working except transmitter.

Generally, analog mode JA and digital mode JD work alternately every 10 days or two weeks.

2. In a JA week, except off days, beacon CW telemetry signals can be heard on the beacon channel, when communication is possible.

3. In a JD week it will open in as follows:
JTD-ON: At the beginning of JD period, station JJ1ZUT (satellite control station) uploads the necessary programs for satellite operation, and JD starts to work at the conclusion of program uploading, when JTD, the transmitter of JD system, becomes possible to transmit downlink signal. During this period, if FO-12 receives any valid uplink signal, JTD will continue to work for mailbox, and it will be turned off three minutes after the last access. If there is no accessing uplink and JTD does not work, downlink PSK stream will be transmitted for five seconds every minute, showing JD to be available. JTD-ON continues for two hours.
JTD-OFF: This follows after JTD-ON and no downlink signal is received for two hours. JTD-ON/OFF repeats cyclically every two hours.
DI: CPU and memory of the digital system work but JTD does not operate. This is to charge the battery during JD period, not to lose posted messages by turning off the whole system.
* Time counting of two hours begins at the conclusion of the program uploading, but this does not generally coincide precisely. Because the satellite has no permanent clock, it is necessary to set the time for CPU every uploading. Therefore the satellite time should be calibrated by comparing it with the correct one at a receiving site. The finishing time of uploading will be shown in the beacon of FO-12.

—The above information is supplied by the Technical Laboratory of JARL

FO-12 Mailbox Version 1.11

1. Setting of the TNC
* TNC should be for the AX-25 Version 2. Version 1 does not connect to JAS-1 (8J1JAS).
* FRACK, waiting timer for ACK (acknowledging signal from the satellite), should be over six. Other setting of time constants are similar to packet link on the ground. Because the mailbox responds to multiple access, processing time may increase, therefore, it may become necessary to increase FRACK more than six.
* MAXFRAMES, the number of packets that can be sent at one time is up to seven. It is better for MAXFRAMES to set less than three.
* PACLEN, the number of bytes of data in one packet, should be less than 200 bytes.

FO-12 transmits with PACLEN = 128 and MAXFRAMES = 1.

Digipeating

Mailbox has no digipeating function, and does not accept any frames as a digipeater.

3. Users commands available

B	displays all file names of the bulletin addressed to all, back from the latest one.
F	displays the latest 15 files.
F*	displays the latest 50 files.
F<d>	displays files pasted in the day <d>.
H	explains available commands and functions.
F<#>	kills mail defined as <#>, a file number, only by writer or addressee. It is not executed while someone is reading.
M	displays all files addressed to the user.
R<#>	displays contents of message defined as <#>.
U	displays call sign and SSID of all stations that have been accessing to FO-12/8J1JAS.
W	writes message to FO-12, responding to the sent prompt. For termination of the text, use <RET>.<RET> or <RET>∧<RET>.

* Letters of both upper and lower case are available. Letter code for packet is ASCII.
* Disconnect by command through the TNC.

The above information is supplied by Technical Laboratory of JARL.

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SATELLITE ACTIVITY FOR THE MONTHS OF FEBRUARY/ MARCH 1988

1. LAUNCHES

The following launching announcements have been received:

INT'L NO 1988	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
013A	Cosmos 1922	Feb 26	USSR	11hr49m	39344	612	62.8
014A	PRC 22	Mar 07	China	1455.5	36613	36613	0.6
015A	Cosmos 1923	Mar 10	USSR	89.5	332	205	72.8
016A	Cosmos 1924						
to		Mar 11	USSR	115	1508	1445	74.0
016H	Cosmos 1931						
017A	Molniya 1-71	Mar 11	USSR	11hr39m	38967	491	62.5
018A	Spacenet 3-R	Mar 11	USA	1429.7	35775	35548	0.1
018B	Telecom-1C	Mar 11	France	1418.4	35799	35083	0.4
019A	Cosmos 1932	Mar 14	USSR	89.7	279	256	65.0
020A	Cosmos 1933	Mar 15	USSR	97.7	675	650	82.5
021A	IRSJ1A	Mar 17	India	102.7	917	863	99.0
022A	Molniya 1-72	Mar 17	USSR	12hr15m	40584	655	62.9
023A	Cosmos 1934	Mar 22	USSR	104.7	1021	967	83.0
024A	Progress 35	Mar 23	USSR	88.9	281	190	51.6
025A	Cosmos 1935	Mar 25	USSR	89.5	356	179	67.0
026A	San Marco-D	Mar 25		93.4	615	263	3.0

2. RETURNS

During the period 70 objects decayed including the following satellites:

1986-080A	Cosmos 1786	Mar 06
1987-108A	Cosmos 1906	Mar 13
1988-003A	Progress 34	Mar 04
1988-007A	USA 30	Mar 01
1988-010A	Cosmos 1920	Mar 09
1988-011A	Cosmos 1921	Mar 04
1988-015A	Cosmos 1923	Mar 22

3. NOTES

a Satellites 1988-016A to 1988-016H were placed in orbit by a single carrier rocket. They are to be used for continuing space research.
b 1988-018A Spacenet 3-R and 1988-018B Telecom-IC were launched on an Ariane 3 launch vehicle from Kourou, French Guiana.
c 1988-021A IRS-1A was launched for India by the USSR.
d 1988-026A San Marco-D was launched from the San Marco platform at Ungwana Bay, Ngomeni, Indian Ocean by a Scout G-1 launch vehicle.

—Contributed by Bob Arnold VK3ZBB

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MORSEWORD 17

Audrey Ryan
30 Starling Street, Montmorency, Vic. 3094

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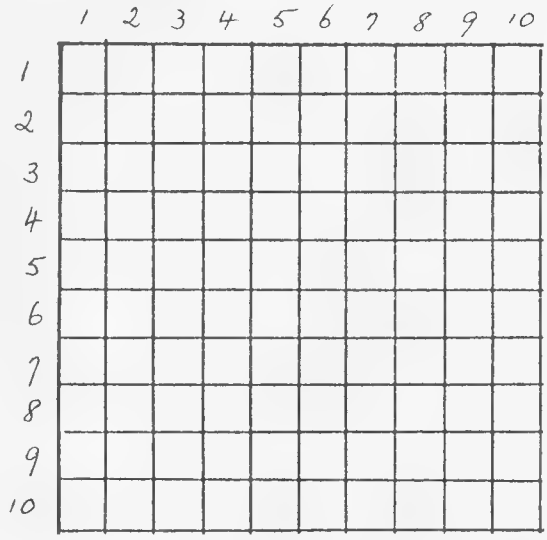
ACROSS

1. Adam's son
2. Corrects
3. Part of face
4. Competed
5. Chanted
6. Property
7. . . . . & threes
8. Gilding
9. Finished
10. Hurries

ACROSS

1. Bubble
2. Fly
3. Regulates food intake
4. Strict
5. Discount
6. Valley
7. Mature
8. Keen
9. Weeds
10. Make water-tight



Club Corner

SUMMERLAND AMATEUR RADIO CLUB

The Summerland Club will hold a mini-Hamfest on Sunday, July 31, at the Richmond Hill Clubrooms. The many items of interest include — packet demonstrations, code speed contest, bring and buy, raffles, sausage sizzle, and much more. So, why not a Sunday out at lovely Lismore on the New South Wales north coast. Listen on frequency 6800 for check-ins and directions.

New services offered by the club include — an on-air Amateur Address Directory and the previously announced Life Membership option. The first Life Member of the Club is John Edwards, of Penhurst. Congratulations John.

It is sad to report the passing of fellow club member, Bernie Foster VK4FOS. Bernie (with Betty VK4BET), joined the Summerland Amateur Radio Club in 1978 when they first moved into the area. Supporting the club as a past committee member and as an ordinary member, Bernie is perhaps best remembered as the founder of the club's early morning net, the "Dawn Patrol". An ardent believer in the use of trapped verticals as a HF antenna in cyclone prone areas, Bernie often demonstrated that a well constructed and installed trapped vertical was both effective and sensible in areas where low wind loading and speed of securing are of extreme importance. Failing health limited Bernie's ability to keep up with the latest technological changes. However, he enthusiastically embraced amateur radio as a way of keeping actively involved with technology. A relationship that continued from his involvement in the design of heavy transport in World War II and other automotive fields since.

Deepest sympathy is extended to his widow Betty and their son Carl.

—Contributed by Jim Cunningham VK2ESI, Publicity Officer, SARC

EASTERN ZONE

The Eastern Zone of the Victorian Division recently celebrated its 50th anniversary. A very successful convention was held at Moondarra, in Gippsland. About 75 people attended and joined in the activities.

Keith VK3SS, entertained the gathering in his inimitable style after dinner on Saturday, when he recounted early days of amateur radio in Gippsland. He reminded all that amateurs have always played an important communication role during emergencies.

A past WIA Federal President, Peter VK3KAU, also spoke about the history of amateur radio and played numerous interesting tape recordings of early days of amateur radio in Victoria.

Many people joined in the fox hunts, which were ably organised by Mike VK3ZQV. The small transmitter was found in some interesting locations; eg about eight metres up a tree, under a pile of briquettes, and in the coat pocket of someone walking around! Overall winner was Peter VK3FLC, who won a rechargable battery courtesy of Mike. Other winners were VK3s YTT, KAI, XBG, DY and KME.

The CW contest, organised by Jeff VK3DZZ and Peter VK3FLC, was not quite as popular as some of the other activities but was entered by some keen brass pounders. The outright winner was octagenarian, Arnold VK3BHI, who also won the same event at a previous convention. Arnold collected the I V Mitchell Memorial Trophy for this effort. Incidentally, the trophy was kindly donated by John VK3AXE, in memory of his mother, and is intended to be passed around the State as various CW contests are held.

The Zone would like to thank all amateurs and their families and friends who attended and helped make Moondarra a successful convention. A special mention should be made of VK4HK, who travelled all the way from Hervey Bay, Queensland, for the convention. Thanks also to trade displays and dealers who provided an eye catching display of equipment for all to buy. Their support is greatly appreciated.

Zone members look forward to seeing all at the next convention in a few years time.

—Contributed by C Morley VK3KME, President, Eastern Zone

CENTRAL HIGHLANDS AMATEUR RADIO CLUB

The Central Highlands Amateur Radio CLub was formed in December 1986, to fill the need of widely separated amateurs within the region, which extends from Rubyvale (325 kilometres west of Rockhampton), north to Clermont, Moranbah and Glendon, south to Middlemount and Blackwater and further south to Springsure. This area includes Dysart, Capella, Emerald and Gindie — approximately 28 425 square-kilometres.

At the end of April 1988, the Club had 11 financial members. Meetings are held on air because of the distances involved. Monthly meetings are held on the third Sunday of each month at 0900 UTC on 3.620 MHz ±QRM. The group has established a two metre repeater on Mount Blue, 3 500 feet and situated 33 kilometres south-west of Sarina. The repeater call sign is VK4RRR which is situated on 146.975/146.375 MHz. The club is endeavouring to locate another repeater system on Hodgkins Peak (about 2 500 feet) in the Peak Range, west of Dysart. This would be a UHF link and repeater, 70 centimetres, VK4RHR. Transmit frequency is 438.500 MHz and receive 433.500 MHz. All transceivers at present are converted Philips 828 units. Link transmit is one watt, aerial 2 dBi, VK4RRR transmit 25 watts, aerial 9 dBi and VK4RHR transmit is 25 watts, aerial also 9 dBi and time out for all is four minutes.

Coverage from the trial site is very good. The Club Technical Officer, Richie, using 150 milli-watts was able to access about 50 percent of the area. Richie was instrumental in the modification of equipment.

The Blair Athol Coal Project generously assisted the club with a grant to install repeaters throughout the region for members and the committees within the Central Highlands.

Any amateur within the Central Highlands wishing to join the club is invited to break in on the Net, or write to the Secretary, Gordon Loveday VK4KAL, "Aviemore", Rubyvale, Qld. 4702. Alternatively, telephone him on (079) 85 4168.

—Contributed by Gordon Loveday VK4KAL, Secretary, CHARC

RADIO CLUB CONFERENCE

An amateur radio operators' conference was held at the Cooee Bay Recreational Council camp during April.

About 50 members of the WIA Queensland Division attended, including 26 voting delegates.

Members attended from Brisbane, Dalby, Cairns, Mount Isa. Conference chairman was Rob Moodie VK4TKA, president of the Central Queensland branch of the Wireless Institute.

Speakers included the Queensland Divisional president, David Jones and the official guest was Terry Carrell, President of the New Zealand Association of Radio Transmitters (NZART).

Conference chairman, Rod, said members were continually upgrading the operation of amateur radio operators and the conference would work towards formalising the band usage for the whole radio spectrum.

Rob has held office on the council of the VK4 Division for the past 10 years. He was elected president this year.

Local amateurs attending the conference were: Noel VK4ZAR, Ted VK4QI (both Delegates), Lyle VK4ALD, Vic VK4MPZ, David VK4MQC, Ken VK4JPE, Doug VK4ZDK, Errol VK4ZHL, Rob VK4TKA, Tom VK4BTN, and Trevor VK4ZTV.

Catering in Rockhampton after the conference was conducted by Frank Sleep VK4CAU, and his wife Hazel.

—Adapted from the Rockhampton *Morning Bulletin* April 13, 1988 and contributed by the CQ Branch

Delegates at the conference from left: Anne VK4ANN, Will Scott and Jim Smart.
—Photograph courtesy Rockhampton *Morning Bulletin*

SOFTWARE PACKET RADIO PROGRAM FOR TANDY COLOUR COMPUTER

A breakthrough in packet radio for Coco owners, from Grosvenor Software (G4BMK), gives full AX25 (Level 2 Versions 1 and 2) operation using a simple modem only — no TNC required. The software allows up to six simultaneous connections plus digipeater operation and beacon, whilst monitoring other traffic on the channel. The display can be scrolled whilst in QSO and any one of the concurrent QSOs or the monitor can be individually selected for display.

The program also permits HF and VHF (300/1200 baud) operation, has full printer support, your call sign built in, and many other features.

Grosvenor Software, already well-known among amateurs, and colour computer owners, for RTTY, CW, AMTOR and SSTV software, is now represented in Australia by Dave Ralph VK4ASB, 23 Darwin Street, Aspley, Qld. 4034. Telephone (07) 263 3872.

ar

NEW CATALOGUE

Stewart Electronics, of Melbourne, now have Update No 3 to their catalogue available.

This update covers the complete range of Amidon ferromagnetic materials and J W Miller inductors for power and EMI suppression applications, as well as types for RF and IF uses.

Copies of Update No 3 are available on request from Stewart Electronics, PO Box 281, Oakleigh, Vic. 3166. FAX: (03) 543 7238.

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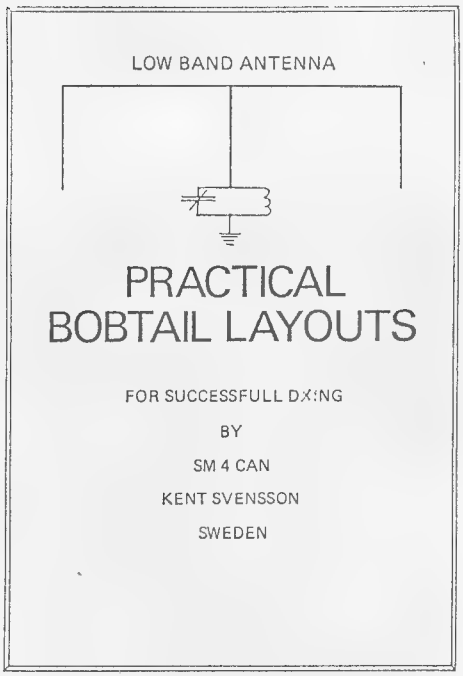

PRACTICAL BOBTAIL LAYOUTS

Due to an interest in low band DXing over a number of years, Kent SM4CAN experimented with many different low band antenna configurations and found the Bobtail Curtain best for his application.

In 1987, Kent published a small booklet, titled "Practical Bobtail Layouts".

After much correspondence and comments, Kent has now published a more detailed booklet of the antenna. This booklet of 27 pages, contains selected information based on practical work, experiences and observations as well as theoretical parts of the antenna's principles, antenna dimensions, feeding methods, construction, installation, grounding, lightening protection, and much more.

The booklet is priced at $US5 or 12 IRCs which includes air mail postage world-wide. For further information write to: Kent Svensson SM4CAN, Bruksgatan 18 B, S-695 02 LAXA, Sweden.

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SOLUTION MORSEWORD 17

Across: 1 Cain 2 edits 3 lip 4 vied 5 sang 6 asset 7 twos 8 gilt 9 ended 10 hies

Down: 1 bead 2 wing 3 diets 4 stern 5 sale 6 dale 7 ripe 8 eager 9 tares 10 seal

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10	•	•	•	•	•	•	•	•	•	•

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Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

Discussing the lack of activity on the bands during the portable operation of VI88SA, at Port Adelaide to mark the arrival of the First Fleet Re-enactment Vessels. From Left: Christine Taylor VK5ZCQ, Harry Hillard VK5AHH, John Mullins VK5PTT and Geoff Taylor VK5TY. Seated: Les Harris VK5KLH.

WHAT, STILL HERE?

Yes, I am still here. I'd like to be able to tell you that overwhelming public demand forced me to stay, but that was not the case (although I have had a few kind persons say that they would be sorry to see Five-Eighth Wave go). And, I suppose that is why I am still here. The fact that I would also be sorry to see it sink without trace and not be replaced by something else, and also the fact that volunteers to take over have been singularly 'overwhelming'! (actually singular is the operative word, and even he declined in the end). Anyway, I am back, at least for the time being.

On Monday, May 9, I attended one of the saddest funerals I have ever attended, even the weather matched the mood. Geoff Taylor VK5TY, his wife Christine VK5ZCQ, and their daughter Greta, also John Allan VK5UL and myself were amongst the eight people who gathered to farewell Rob Wilson VK5WA. Perhaps Rob was not one of the most active amateurs on the bands (in fact, at 87 it had been a couple of years since he had been active) and perhaps he was not the most well-known, although most of us, as amateurs in this Division, have cause to be grateful to him. Why? Well, in a 'nut-shell', Rob Wilson was the man mainly responsible for obtaining the Burley Griffin Building for our Divisional Headquarters. Admittedly, he headed a team whose object was to find us such a building, but I understand that he did most of the negotiating. There will be an obituary in this or a future edition of AR, but I felt I had to mention the passing of one of our Life Members, and one who had done something to earn our lasting thanks.

As those who attended the AGM will know, Council's parting gift to me as the first lady President, was a photographic sitting, the result of which will soon be displayed at the BGB (and I will also get a copy to keep). I was deeply moved by this gesture and also by the very nice things that were said by Don VK5ADD and Alan VK5NNM, on that night. However, this started me thinking how nice it would be is we had other photographs of Past-Presidents around the walls (it's going to be pretty lonely with just me and Marconi up there!), so I would like to start a campaign. Are you a past president (or a friend or relative) and if so do you have a photograph that we could have for the BGB. If it showed you as you were around the time of your presidency, so much the better, but if not, do you have a more recent one that you would be willing to donate. I will look forward to hearing from you.

YOUR 1988/89 DIVISIONAL COUNCIL

Don McDonald VK5ADD — President and Alternate Federal Councillor
Hans Van Der Zalm VK5KHZ — Secretary
Bill Wardrop VK5AWM — Treasurer
Alan Mallabone VK5NNM — Membership Secretary and Education Officer
Rowland Bruce VK5OU — Vice-President and Federal Councillor
Bob Allan VK5BJA — Vice-President, Public Relations Officer, DOTC Liaison SATAC Co-ordinator
Peter Madden VK5PRM — Minutes Secretary
Ken Westerman VK5AGW — Clubs' and Country Members Representative
Graham Iles VK5AT — WICEN Director
Jenny Warrington VK5ANW — Immediate Past-President

LOST DOTC?

In case you have been trying to find DOTC, they have moved. The Radio Branch are now located in the 'Commonwealth Centre', 55 Currie Street, Adelaide, phone 237 6333.

And, in case you have been looking for our QSL Bureau Manager, John Gough VK5QD, has also recently moved. He is now at 51 Mildred Street, Kapunda. His telephone numbers is (085) 66 2335.

DIARY DATES

Tuesday July 26 — Speaker possibly Peter Gamble VK3YRP, our new Federal President (unconfirmed at time of going to press). 7.45 pm.

ADVANCED NOTICE
Christmas Meeting, December 6 — Woodville Community Hall, speaker Dr Mike Tyler, Reader in Zoology at Adelaide University (an excellent and very funny speaker, so mark it in your diary).
Clubs Convention 1989 — April 7-9, at Aldinga.

ar

QRM from VK7

John Rogers VK7JK
VK7 BROADCAST OFFICER
1 Darville Court, Blackman's Bay, Hobart, Tas. 7052

The monthly meetings will be held as follows:
Northern Branch — Launceston Maritime College, July 8.
Northwestern Branch — Penguin High School, July 12.
Southern Branch — Activity Centre, 105 Newtown Road, Hobart, July 6, at 8.15 pm.

The Southern Branch President is now Ron VK7RM, who took over from Stuart VK7NXA. Stuart's work and study committments changed and he had to withdraw from the President's position.

The VI88 call sign began to be used in Tasmania when Bob VK7NBF used it during the Devil Net on Tuesday, May 10. Since then, written applications have been accepted or its use by other operators. The address to write to is: PO Box 1010, Launceston, Tas. 7250.

After a long period of tenure, John VK7KDR, has had to relinquish his post as News Co-Ordinator for the north-west of the island. New work commitments have meant he is no longer in a position to continue this task. We hope that he will soon be able to get on air once more.

WICEN in the south has made some changes following an exercise, "Call Out" in April. Extreme problems with QRM at the base station has meant a transfer out of town, and, after some searching, a new site has been found, where reception conditions are very much improved. Regular WICEN exercises in the south and the north/north-west have resulted in good report from SES and other participating bodies. Recently, in the south, a radio telephone voice procedure pamphlet has been circulated to assist with training for more efficient message handling.

The "long haul" 20 metre Sunday VK7WI Broadcast has been resumed at 0930 hours local time on 14.140 MHz, for the benefit of VK7s, and others who journey north to find warmer climes. This relay is carried out by Arthur VK7SE.

—John VK7JK

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COMMITTEE APPOINTMENTS

Kevin VK1OK, has been appointed Vice-President of the VK1 Division following the elevation of Ray VK1ZJR, to the Federal Executive. Good luck to both on their new positions.

ITU DAY

The ACT Division ran a field station, AX1ITU, for ITU Day at Dickson College in Canberra. Terry Bevan VK1NAV, a science teacher at the College, has established a radio club, VK1NAT, in the science laboratory and amateur radio is an informal part of the science curriculum.

The station included the club's TS-520, running a mixture of voice and digital modes and an FT-707 running phone. Antennas were a trapped vertical and a "school-made" G5RV.

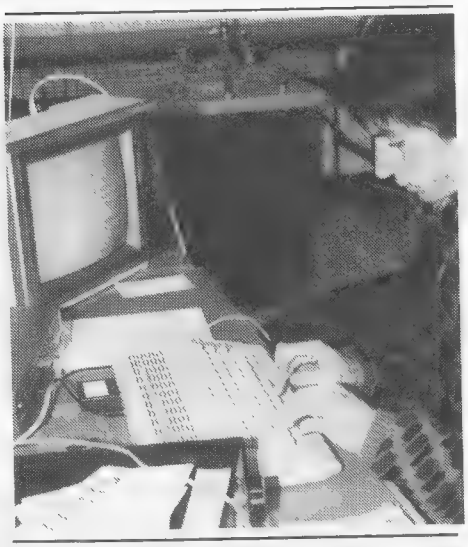
Full call operators were rostered on duty to supervise AX1ITU, but for most of the time, the station was manned by students from the College. There was considerable interest shown by the students in amateur radio and during school hours, the laboratory was bursting-at-the-seams with students, and others. In view of the current debate about attracting "new blood" to the hobby, it was worth noting that the digital mode operation attracted much of the unsolicited attention from the computer buffs.

Propagation was good in the afternoon and evening, and contacts were made with European, Pacific, North American and, of course, Japanese stations. The total number of contacts was not high (about 60) largely due to the inexperience of many of the operators, but, given the mutual pleasure enjoyed by supervisors and operators alike, it was a satisfying day. After all, it is the quality that counts, not the quantity.

On the point of quality, I would like to pay tribute to the many stations calling AX1ITU who were both patient and helpful to the newcomers on the microphone and keyboard. It was pleasant to know that the spirit of amateur radio still exists despite what one reads in various letters to editors. Well done, YLs and OMs and thanks to the operators who helped on the day: Jack VK1FM, Jock VK1LF, Barry VK1ABR and Ron VK1RH.

VK1 TECHNICAL WORKSHOP

The Division is now running a Technical Workshop each month in the Griffin Centre. The Workshop aims to expose all amateurs who have the slightest technical interest to a wide range of varied hands-on activities, and in so doing, raise the general level of technical competence within the Division. It is not just aimed at those who already have the skills, but to all amateurs who aspire to get more out of this hobby. The main emphasis is on explaining the basics of various RF techniques, modes, measurements, construction and equipment.



The RTTY Station.
—Photograph courtesy Peter Cummins.

The workshop is being run as an autonomous collective at present with the directions pursued being decided by those attending. The Workshop has been operating since February and, during that time, the subjects of Masthead Preamplifiers (theory and alignment), fault finding and alignment of the DSE Explorer, improvements to the DSE Commander, Packet Radio — the fundamentals, Amateur Television and what is inside the black boxes have been covered.

In the future we will be conducting tours of technical facilities, getting Fox Hunts back on the scene in the ACT, delving into all manner of technically related topics and, possibly, doing some group construction. We may also combine with the WIA class group to give them some experience before they sit the examinations. So, if you are interested in more than Black Box (or Gray Box) operation and are not afraid to pull the covers off some equipment and delve inside, come along and put the amateur experimenter back into amateur radio.

The Workshop is held on the second Monday of each month in Room 3 at the Griffin Centre (upstairs) at 7.30 for an 8 pm start. For further information contact Neil VK1KNP on (062) 64 4654 (BH) or (062) 54 3225 (AH) or listen to the VK1 Divisional Broadcast.

REPEATER NEWS

VK1RIR, Canberra's 70 centimetre repeater, is now back on-air after what amounted to a major rebuild. Rob VK1KRM, advises that the only original component left is the chassis!

Users of VK1RGI, the two metre repeater on Mount Ginnini, may have noticed some degradation in performance over the last few months. It appears that, after nine years, the antenna had developed crystalline joints. As a temporary measure, a side mounted dipole has been pressed into service.

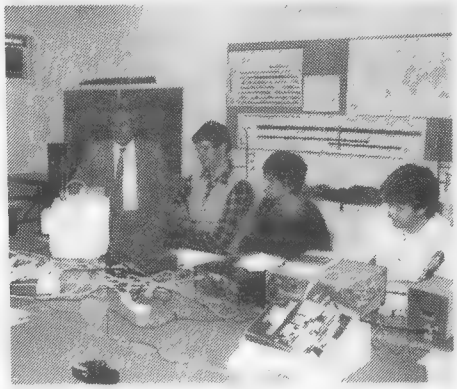
By this time, it is anticipated that a new antenna will be in place (hopefully before winter sets-in). It is expected that the new antenna will have different propagation characteristics. The Repeater Liaison Officer, Rob VK1KRM, would welcome any reports on its performance.

CASTROL WORLD CAR RALLY

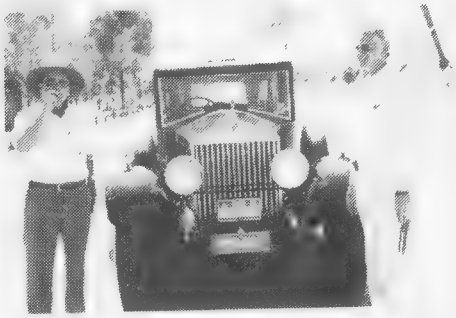
Thanks to the many amateurs from around Australia who provided valuable assistance in making the Castrol World Car Rally one of the major successful events of the Bicentenary. Over 1000 cars from around the world joined in the largest vintage and veteran car rally ever held anywhere in the world. Dennis VK1DG, was the amateur communication co-ordinator and he deserves his share of the credit for the event's success.

Searching for a Contact on Phone.
—Photograph courtesy Peter Cummins.

Assembling over 800 cars for the final Motorcade through Canberra.
—Photograph courtesy Dan Steiner VK1ST



Station AX1ITU.



Alex VK1ZDX (left) and Rob VK1KRM, beside a magnificent vintage Rolls Royce.
—Photograph courtesy Dan Steiner VK1ST

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

COUNCIL MEMBERS AND OTHER OFFICERS — New South Wales Division, 1988/89

*President	Roger Henley VK2ZIG
*Vice-President	Tim Mills VK2ZTM
*	Dave Horsfall VK2KFU
*Secretary	Andy Keir VK2AAK
Treasurer	Dave Horsfall VK2KFU
Assistant Treasurer	Dave Thompson VK2BDT
*Affiliated Clubs Officer	Julie Kentwell VK2XBR
*Education Service Liaison	Terry Ryeland VK2UX
WICEN Liaison	Tim Mills VK2ZTM
NTAC (NSW Technical Advisory Committee	Tim Mills VK2ZTM
Publications Officer	Dave Horsfall VK2KFU
Property Officer	Tim Mills VK2ZTM
Station Engineer	Jeff Pages VK2BYY
*Broadcast Officer	Steve Pullan VK2KXX
Mini-Bulletin Editor	Tim Mills VK2ZTM
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Membership Secretary	Julie Kentwell VK2XBR
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Correspondence Course Supervisor	Cec Bardwell VK2IR
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Member Services	Roger Henley VK2ZIG
Publicity Officer	Julie Kentwell VK2XBR
Federal Councillor	Jeff Pages VK2BYY
Alternate Federal Councillor	Tim Mills VK2ZTM Roger Henley VK2ZIG
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Administrative Secretary	Maureen Lavery
Intruder Watch Co-ordinator	Vacant — volunteer welcome
Slow Morse Supervisor	Vacant — volunteer welcome
Awards Manager	Col Stevenson VK2CS
Postcode Contest Manager	Peter O'Connell VK2EMU
Returning Officer	Peter O'Connell VK2EMU

* Divisional Councillor

The July Postcode contest on Friday 31, 9 to 11 pm, covers both 10 metres (28.100 to 28.600 MHz) and the microwave bands, 23 centimetres and above. Details on the Sunday Broadcast.

Trash and Treasure will be held on Sunday, July 26, at 2 pm, in the Parramatta car park.

Are you prepared for the 1988 Remembrance Day Contest?

Applications for the VK2 Awards are starting to arrive for the Contest Manager. A list of the first claims will be published next month.

NEW MEMBERS

A warm welcome is extended to these new members during May.

J M Alcott, Assoc, Thurgoona
N J Bongiorno, Assoc, Smithfield
B Casson, Assoc, Maclean
P J Chambers VK2MJC, Hornsby
J J Cubitt VK2FLE, Chatswood
R A Fenton, Assoc, Bathurst
A J J Gapps, Assoc, Glenbrook
J D Gooday, Assoc, Potts Point
W J Le Cornu VK2MEI, Ives
P S Milliken VK2XMR, Raymond Terrace
F Noel VK2CCN, Ryde
A J Pengelly VK2BUP, Croudace Bay
R C Upton VK2PPV, Lethbridge Park
C F Weston, Assoc, Smithfield
V R Wise VK2PEN, Willmot

VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

THANKS

The WIA would like to thank the following for their donation of QSL cards towards the WIA collection:
Bill VK3JT
Bruce VK2BDX
Ron VK3RN
George VK5RX
Wally VK3MJ
Lionel VK3NM
Mac VK6MG
Norm VK3ANT
Edgar VK7RY
Mrs Ivy Griffin for the QSLs of her late husband, Ian VK3VS
Martin VK5GN, for QSLs of Peter VK5RB
Mrs Ivy Bryant, of Nagambie, for QSL cards of her recently deceased husband, Sid VK3CI
Peter VK3NPL, for QSLs of Silent Key, George VK3FM.

—Contributed by Ken Matchett, QSL Collection Curator

OFFICE BEARERS

The results of the 1988 council elections were announced at the Annual General Meeting of the Victorian Division on the evening of Wednesday, May 11. Councillors elected are:
Peter Mill VK3ZPP
Bill Trigg VK3PTW
John White VK3KJW
Jim Linton VK3PC
Peter Barclay VK3FR
Steve Harrington VK3BYI

The outgoing President, Barry Wilton VK3XV, in his address, emphasised several points made in his Annual Report. He confirmed that the Division is in a sound financial position, but stressed the need to streamline and the urgent need of greater participation in Divisional matters by more voluntary workers because, without this, members services cannot be maintained on a balanced budget.

The 1988 Council met for the first time, briefly on the same night. John Ambler VK3DJE, was appointed to Council. Office bearers were elected and are as follows:

President	Jim Linton VK3PC
Chairman	Peter Barclay VK3FR
Acting-Secretary	Peter Mill VK3ZPP

The Mount Macedon two-metre repeater, VK3RMM, should by now have undergone a frequency change. This is necessary to avoid interference to a new service operated by the owner of the tower. The new frequencies are: receive — 147.850 MHz; transmit — 147.250 MHz.

The Victorian Division Office is mailing an information kit to all VK3 Novice licensees — both members and non-members. This kit includes voice repeater guidelines and the two metre bandplan.

—Contributed by Bill Trigg VK3PTW, VK3 Council

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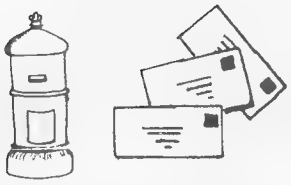

MOST GRATEFUL — IT PAYS TO ADVERTISE!

Thanks to the insertion of my inquiry in *Amateur Radio,* I have to hand *The Australian Official Radio Servicing Manual, Volume 1* for which I am so grateful. After the request was published in Hamads, April 1988, Pounding Brass Editor, Gilbert Griffith VK3CQ, from Bright, offered me Volume II. Unfortunately, Volume I was the particular edition I was seeking. Shortly after, Snow Campbell VK3MR, from Clyde, advised that he was able to provide the very volume I required and has since supplied same.

I would sincerely like to thank these members, as in desperation, I had been in touch with the National Library in Canberra, who informed me that the State Library of Tasmania and the Sydney Technical College at Broadway were the only known libraries to hold this volume. As it was printed in 1937, my chances of obtaining a copy were extremely slim. However, all bouquets to these staunch and faithful members of the WIA. It certainly proves that radio men read their magazine, especially the editorials.

Thank you AR, Gilbert and Snow, you have all been the cause of another success story.

Gratefully yours,

Frank Elliott
15 Lincoln Street,
Forster, NSW. 2428

ar

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NOVICES ON TWO METRES

This letter might be somewhat controversial but, it does represent the feelings of many full and limited call operators in my area!

I understand that novices will now have FM privileges from 146-148 MHz, including the use of repeaters.

May I congratulate the Federal Council of the WIA on obtaining these unearned and unwarranted privileges for novice operators and offer my commiserations to all full and limited licence operators whose licences have been debased and degraded by this self-same action.

Let it be clearly understood that I have no quarrel with novice operators themselves; anyone who can get an improvement in conditions for no effort at all is to be envied, not condemned. No, my quarrel is with the Executive Council of the WIA and the fact that they appear deliberately to have misrepresented the feelings of the majority of full and limited call holders.

Consider the following:

a. At the Forum held in VK2 in May and July 1987, the general consensus was that whilst it was a good idea to have a band common to all classes of licence, that band should not be two metres. 70 centimetres was the preferred option. (AR, September 1987, page 56).

b. The VK5 survey held on this subject was against novice privileges on two metres. (AR, October, 1987, page 57).

c. The VK3 survey was in favour of Novice operation on two metres but over a small segment only, namely 150 kHz.

d. A survey conducted by the St George ARS, of which I am a member, was overwhelmingly against such privileges. Only five out of a membership approaching 170 voted in favour.

e. Listening to on-air discussion of the topic around the May-September 1987 period gave the distinct impression that few full and limited call operators were in favour of the proposal.

I believe that indeed most full and limited call holders are still not in favour of granting such a large slice of two metres to novices, and furthermore, I believe that the Federal Council went against this main body of opinion and was determined to get novices on two metres no matter how anyone else felt. Bear in mind that it was the WIA who asked the DOTC for this change in regulations. The Department did not initiate this move.

It is now too late to change things — though I do believe that the novice segment on two metres should be reduced to no more that 500 kHz. I worked very hard to obtain my full call, as I am sure most people did. I am proud of my full call and don't think much of a council that degrades it without so much as a by-your-leave. Where is the incentive to upgrade now? If the Federal Council continues in this fashion what will be the point of having different classes of licence? Perhaps the council would really like to see amateur radio debased to CB standards. It might even increase the membership of the WIA and think of all the good equipment the advertisers could sell!

Unless I am convinced by the Council that their action is truly representative of the majority of full and limited call holders, then at subscription renewal time I shall very carefully consider whether or not to continue my membership. I see no real point in paying just to be kicked in the face.

Could this be why so many others are also voting with their feet?

Yours faithfully,

Clive Wallis VK2DQE
3 Douglas Place
Miranda, NSW. 2228

ar

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COMMENTS ON WIA FTAC PACKET PAPER

I have studied the background paper entitled "Packet Radio on the 14 MHz Band" dated January 1988, prepared by the WIA's Federal Technical Advisory Committee (FTAC). My comments are limited to activities and operation of packet BBS stations on 14 MHz as the FTAC paper deals specifically with this band.

Particularly, I should like to point out that the information furnished by FTAC is of questionable accuracy inasmuch as it presents a biased argument influenced solely on the domestic problem concerning potential interference by packet BBS stations, operating under automatic control on the 20 metre band, to one particular SSB net operation, namely the Travellers' Net.

From the information that I have received as well as from informal observation, it appears that FTAC has not addressed the problem in an adequate and objective manner and chooses to ignore the need to draw any recommendations in line with point (4) of the IARU Resolution 86-2 (as quoted in the FTAC paper). Point (4) of Resolution 86-2 reads:

"(4) that member Societies are urged to address, through their regional organisations, the need for specific provisions for packet radio operation in their band plans consistent with world-wide activity."

FTAC has not acquainted its members with a clear understanding of the packet radio operations concerning packet BBS stations.

I am of the opinion that packet radio operations cannot successfully co-exist with other modes, particularly the operation of packet BBS stations, and to confine packet radio, by regulation or strict adherence to the IARU band plan, to the RTTY and AMTOR sub-band would present the same sort of problems that stimulated recent IARU discussion on the subject.

According to the FTAC paper, the allocation of amateur sub-bands for specific modes is not a regulatory matter of the Australian Administration. The WIA recommends and has adopted the idea of a "Gentlemens' Agreement" policy to resolve any conflict of band usage, and tends to rely on this policy.

However, as noted above, the WIA has neglected to take into consideration, the need for specific provisions for packet radio operation in this band plan policy consistent with world-wide activity. It is absolutely necessary for such provisions as discussed in Point (4) of Resolution 86-2 be addressed in order to facilitate the development of packet radio.

Sincerely yours

73

Gil E Mays VK6AGC
PO Box 53
Hillarys, WA. 6025

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MORE ON TILTING THE YAGI

I would like to draw attention to an error in the circuit accompanying my article "More on Tilting the Yagi", which was printed in the May issue of AR.

The Green LED, which lights to indicate that the Polarity switch is in the Horizontal position, LED 2, has its polarity incorrectly shown which would result in *both LEDs* being lit in the Vertical position as illustrated, and *neither LED* being lit in the Horizontal position.

The amended control portion of the circuit is shown in Figure 1.

I hope that this will serve to put the record straight.

73

Harold French VK3ZRM
RMB 1190
Yinnar, Vic. 3869

See page 61 for Figure 1.

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I AM PLEASED. . .

I am pleased to see colour on the cover of the magazine and find the technical articles, and to a lesser extent, club news the best reading.

Yours sincerely

Mike O-Keefe VK4YOB
22 Ash Street
Kirwan, Qld. 4817

ar

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HANDBOOK ERROR (MAYBE LETHAL!)

I would like to bring to readers attention, an urgent matter that concerns the Prentice Hall publication, advertised in the April issue of *Amateur Radio,* Radio Theory Handbook for Amateur Operators, page 3.

On page 218 of this manual, in which a power line (240 volts AC) filter is described, the schematic contains a *lethal* error. The circuit shows transposition of the *active* and *neutral* lines from the input end of the filter, to the output. Anyone using this circuit description to assemble such a filter places their life in jeopardy!

I have informed the WIA VK2 Division, and an article was carried in the Divisional Broadcast to that effect. I will also inform the office of Prentice Hall at the very first opportunity.

This type of power line filter enjoys much popularity amongst computer users, and an unwit-

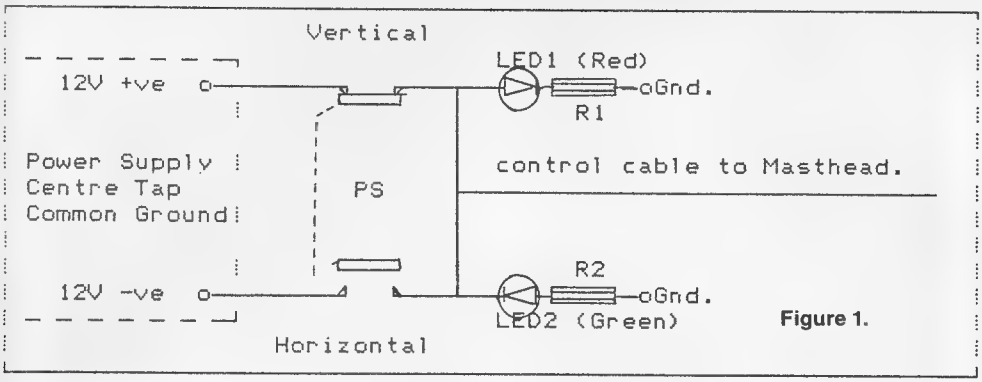

Figure 1.

ting or inexperienced constructor could place him/herself and others in great danger. Thanks for another great year of the AR publication, keep up the good work.

73

Colin Stevenson VK2CS
WIA VK2 Divisional Awards Manager
PO Box 109
Mount Druitt, NSW. 2770

ar

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MAY EDITORIAL

Referring to the May Editorial — I suggest the Editor give some thought to using country members to assist with editorial (or any) tasks. I can spare another couple of hours each week.

I offered to help the Victorian Division even as an assistant's assistant, however they were not enthused.

Communication should not be a problem.

Regards

Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance, Vic. 3909

ar

❑ ❑ ❑

A HAPPY READER!

I enjoy the magazine very much, especially the technical articles. It is a bright spot at the beginning of each month.

Thanks to all.

Yours sincerely

Murray Young VK3BNH (ex-VK3PKV)
69 Kangaroo Ground Road
Warrandyte, Vic. 3113

ar

❑ ❑ ❑

SURPRISE!

I read with great surprise the changes proposed by the DOTC for the operating of amateur radio club stations.

In Jim Linton's review of the Department's DOC 71 Brochure, it appears that club stations will require written permission from the State Manager of the DOTC for any operation of the station away from its usual location. If this is the case, it will make it almost impossible for clubs and groups, such as schools, Scouts and St John Ambulance, to participate at functions of which long prior notice could not be given.

I was given to understand that part of the re-writing of the regulations for amateur radio was to allow greater self-regulation. This move would seem to be totally at odds with this stated intention.

It would seem to me that, with the number of clubs around Australia, and the potential for portable operation, that the Department could be creating a huge work load for its state managers. This will see amateur radio miss out on a lot of activities as the Department finds itself unable to rapidly process the requests. One only has to note the time it takes for licences to be turned around to see the lead-time required. I am also left to wonder just why the Department has suddenly become so interested in radio club portable operations. Are there moves afoot to ban or at least restrict this sort of activity?

I suppose that, under the "user pays" principle, we can expect to pay for the increase in work this ludicrous regulation will cause. I would hope that the WIA will petition the Department to make some changes in this area.

Yours faithfully,

Peter B O'Keefe VK3YF
PO Box 654
Shepparton, Vic. 3630

ar

TANK CIRCUITS AND OUTPUT COUPLING (VK5BR)

AR, May 1988
Corrections to Mathematical Expressions.

1. Page 8, Second Column, third expression
Class C RL = Eb/2Ib

2. Page 8, Third Column, first and fourth expressions

$$XL = Xc = RL/Q$$

$$NS = Np\sqrt{RA/RL} \qquad \ldots d$$

where Ra = Antenna or transmission line load resistance

3. Page 10, First Column, all inclusive

$$XL1 = RL/Q$$
$$XC1 = XL1$$
$$RX = RL/(Q^2+1)$$

where Q = loaded Q (say 12)

$$XC2 = \sqrt{\frac{RX \cdot RA^2}{RA-RX}}$$

$$XL2 = \frac{XC2 \cdot RA^2}{RA^2 + XC2^2}$$

3. Page 10 Second Column, last expression

$$XC = \frac{XC1 \cdot XC2}{XC1 + XC2}$$

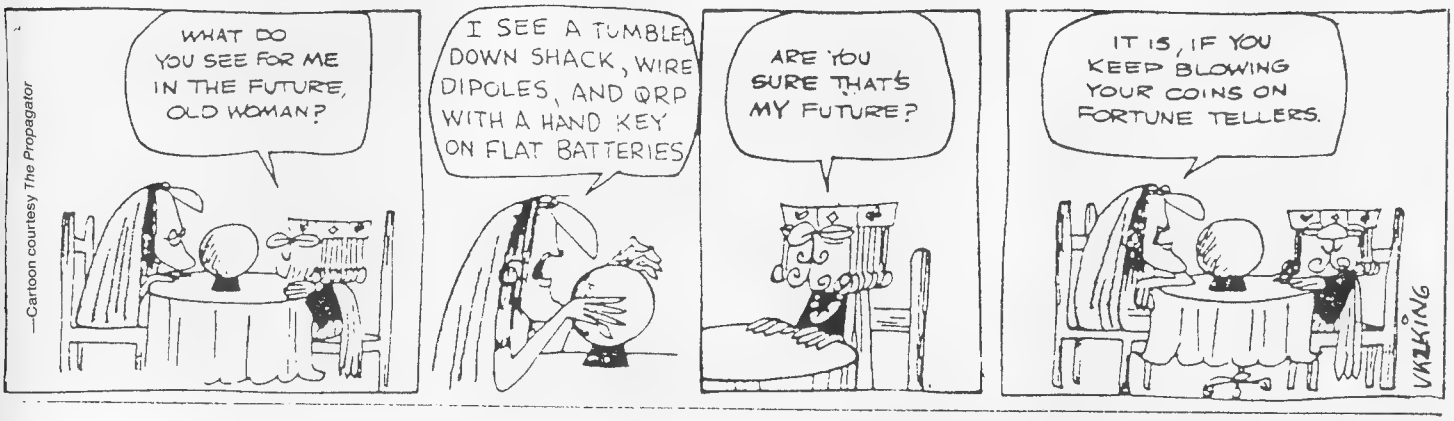
1. Page 11, Second Column, Second Sentence, should read:
"To achieve a satisfactory filter response, aim for a high Q in the inductors (at least 50) and avoid capacitors with high loss resistance such as is often found in ceramic capacitors."

2. Page 10, Third Column, last word should be "and".

3. Page 11, Third Column, Fourth Line — "valve" not "value"

—Lloyd Butler VK5BR

Figure 3: Pi Network split into two sections for analysis.



—Cartoon courtesy *The Propagator*

Silent Keys

It is with deep regret we record the passing of:

MR ROBERT HUGHES BLACK	VK2QZ
MR GORDON CASSIDY	VK2DEG
MR NORMAN COLLINS	VK3AOC
MR R H GRUNDY	VK5BG
MR R B MONFRIES	VK5RB
MR DONALD BOYD SCHRODER	VK2SM
MR JAMES WOOD SWAN	L40161

Obituaries

ROBERT HUGHES BLACK VK2QZ

Robert Black died at his home on March 17, 1988, after a long and distressing illness.

Robert was born on December 20, 1917, in the small country Victorian town, Willaura, about 80 kilometres west of Ballarat. His father was a bank manager who suffered the peripatetic penalties of his profession, as did his family. Robert attended 18 schools before completing his Leaving Certificate at Parramatta High School and eventually attending Sydney University as a medical student.

In 1941 he enlisted in the Royal Australian Army Medical Corps at Cairns. His work took him from the tip of Cape York to a casualty clearing station in Lae, New Guinea. He was discharged in 1946 with a distinguished service record.

There are a number of articles by Robert in *Amateur Radio* which include highly technical matters, but also some interesting titles such as "Heinrich Rudolph Hertz — a paper on his life and work" and "Pink Pages for Prolix Professor". Amongst his many awards is the 1971 Amateur Radio Award for technical articles.

Sympathy is extended to his wife Gail, son Robert, daughter-in-law Celia, and grandchildren Katherine and Robert.

ar

ANTHONY (TONY) TAYLOR VK4FOX

T T liked to think he was something of a FOX. His tongue- in-cheek on air comments and remarks about topical subjects provided a catalyst for stimulating discussion among North Queensland amateurs.

Against a background of a Malayan birthplace in colonial days (the currency bore his father's signature), schooling in England and Cranbrook, Sydney, Tony worked as a plantation manager in Papua New Guinea before joining the airline, TAA in PNG. Tony's new wife, Pam, convinced him that her hometown, Innisfail, was the place to settle and raise their two daughters. Tony started a small business and eventually became a local authority on music and Hi Fi.

In 1977, he discovered the joys of radio communication via CB radio, and eventually obtained his AOCP.

Amateurs visiting the area and calling in on the Cairns repeater would invariably be invited to "Drop in and have a cup of coffee" by the always-listening VK4FOX. Tony's shop was a centralised meeting spot for local amateurs and CBers whom he always encouraged, often successfully, to try for their novice licence.

His regular participation in nightly 80 metre nets will be sorely missed by many, and the Cairns and District Amateur Radio Club mourn his passing.

Misunderstood by a few but admired by many, T T was a person you could not ignore.

Vale Tony Taylor VK4FOX — Silent Key May 16, 1988.

ar

ION MORRISON VK4MO

Ion passed away on April 26, 1988.

Born in Grafton some 60 years ago, Ion was educated at Kings College in Sydney, and graduated from Sydney University which he had entered when he was 16.

He practiced medicine at Nowra, Hawthorne (Brisbane), before specialising in asthma and allergies on the "Terrace". In latter years Ion enjoyed semi-retirement at Manly.

Ion saw service in the RAAF and retained an interest in aviation medicine, a field in which his son Ion, practices.

Always a keen radio amateur, never afraid to experiment, he was a familiar and popular figure at radio outings. During several medical emergencies conducted on amateur radio Ion's professional advice was sought.

Ion is survived by his wife Dell, daughters Penny, Jenny, Lindy and son Ion, to whom all amateur's sympathy is extended.

—Peter Brown VK4PJ

ar

NORMAN COLLINS VK3AOC

Norman passed away at the age of 81 years on March 20, 1988, following a stroke.

He was first licenced in 1949 and was mainly active on two, 40 and 80 metres. Born in Northern Ireland on August 30, 1906, he came to Australia with his brother and sister in 1927 following the death of his parents.

Norm was employed by the food processing company Kia Ora until his retirement in 1962.

When World War II commenced, Norm enlisted in the 2nd AIF and served in the Middle East, Syria and the Desert.

Norm was very active from his QTH in East Saint Kilda prior to moving to Torquay in 1984. His wife Beth predeceased him in the early 1950s.

—J K Cosgriff VK3WM

ar

BOB GRUNDY VK5BG

Bob Grundy became a Silent Key on April 19, 1988.

He was born in Murray Bridge, South Australia on March 13, 1915.

Bob was interested in radio from the time he left school and received his amateur licence in late 1937.

In the Depression Days, when work was difficult to find, Bob pencilled for a bookmaker after leaving school. He then became a linesman for the Murray Bridge Corporation erecting power lines. For a short time he also did radio repairs for a local radio retailer.

He became involved with the local radio station, 5MU and subsequently had the opportunity to become Radio Operator with the Leichhardt Search Expedition, in 1938, which was led by Dr A Grenfell Price. This expedition was formed to search for the remains of Leichhardt who perished in 1848, presumably in the Simpson Desert, whilst attempting to cross Australia from east to west. Bob had daily contacts with the expedition in the field from his post at Oodnadatta, and sent regular press releases on the progress to *The Advertiser* newspaper.

In March 1952, Bob was appointed Technician-in-Charge at 5PI, Crystal Brook, coinciding with the installation of a new tower. Bob then lived in the residence at the tower site and continued his amateur radio activities, not withstanding the RF that was ever present. His family recounts the story of how that station could be heard whilst lying in the bath — it was rectified from the Chip Heater. On other occasions, whilst conducting tours for youth and local church groups, Bob would demonstrate the RF by showing how bright a fluorescent tube would light up.

Bob remained at the tower residence until his retirement in 1980, when he moved into the town of Crystal Brook. Here he remained until his death.

Bob's memory was extraordinary. He could recall happenings in contacts down to the most intricate detail, giving names and, in most instances, dates.

He will be sadly missed by his many friends and contacts. Sincere condolences are extended to his family, wife Margaret, two sons and two daughters.

—Lionel Medlin VK5ACW

ar

GORDON PROCTOR

Although he did not hold an amateur radio call sign, Gordon Proctor, who passed away on April 19, 1988, will long be remembered by the amateur fraternity.

Born 96 years ago, Gordon set-up business as a car dealer in Grenfell in 1912. From 1948 he resided at Gosford.

A lifelong interest in youth, mainly with the Scouting movement, gave Gordon the opportunity to teach young people basic electronics in his specially designed workshop. Many amateurs today owe their beginnings in electronics to the grounding given by Gordon.

All will remember his many home-brew gadgets designed to demonstrate electronics, ranging from a simple torch bulb to a mini-watt transmitter and receiver, all transistorised.

He will also be remembered at the Gosford Annual Field Days as the gentleman at the "Calls Present" board, where amateurs affixed their QSL card to indicate their presence. Declining health has caused Gordon to miss the last couple of Field Days.

Gordon held Honorary Membership of the Gosford Rotary Club and the Central Coast Amateur Radio Club, primarily because of his service to youth and the community. He will be sadly missed.

Ed Dyring VK2ED

ar

NEW FROM ICOM

What is being billed as the ultimate HF amateur radio station is soon to be released by Icom.

The station will have a 100 watt transmitter, two receivers, a data terminal, spectrum analyser, a cathode ray tube monitor and a large capacity memory facility.

One unofficial estimate put its cost as high as US$10 000. Full details are expected soon from Icom Headquarters, Japan.

IONOSPHERIC SUMMARY

For the month of March 1988, the monthly values were 10 cm flux 115.8, sunspot number 75.8, A index 11.7, I index 60.5 and there were 21 flares.

Solar activity was moderate during two periods. The first period was March 16 to 18 when there was a total of 17 M-class solar flares. The largest of these was an M8 flare on March 16. The second period was March 24 and 25 when there were four M-class flares. The number of energetic solar flares during the month was the highest since the beginning of the solar cycle. Likewise, both the monthly averaged 10 cm solar flux and the monthly averaged sunspot number reached their highest values so far this solar cycle.

The daily 10 cm solar flux peaked on March 31, with a value of 134, the highest daily value since May 21, 1984. Details of the flares during March are:
March 15, 6; March 16, 7; March 17, 2; March 18, 1; March 24, 2; March 25, 2. The longest periods of fade-out occurred on March 15 from 1144 to 1222 UTC, and March 2 from 2047 to 2126 UTC.

The geomagnetic field was generally active throughout the day on March 6. March 8 saw minor storm levels especially early in the day, and from March 14 to 16, the field was at mostly active levels. From March 26 to 30, the geomagnetic field became disturbed towards the middle of March 26, and was at storm levels by later in the day. The field was at active to minor storm levels throughout March 27 and 28. The field was again at minor storm levels at times on March 29 and 30. The level of magnetic activity wa low for the first half of the month. The feature of the second half was the extended disturbance during March 26 to 30.

M or X class flares refer to the Xray classification system for solar flares. In this system, X class flares are more energetic than M class.

A index values are:
0 to 7 — quiet
8 to 15 — unsettled
16 to 24 — active
25 to 35 — minor storm
36 and above — major storm.

Radio Australia gave an A index value of 41 for April 6 and 30 for April 22.

—Contributed by Frank Hine VK2QL

ar

Magazine Review

Roy Hartkopf VK3AOH
34 Toolangi Road, Alphington, Vic. 3087

G — General
C — Constructional
P — Practical without detailed constructional information
T — Theoretical
N — Of particular interest to the Novice
X — Computer program

RADIO COMMUNICATION — March 1988. Desk Microphone with automatic gain. (C N). DXing with Dipoles. (C N). Vertical Antennas with no ground-plane. (P N).

BREAK IN — March 1988. Wellington VHF Group issue. (G). Loop Yagi Antenna. (P). National Link Extended. (G).

HAM RADIO — February 1988. Switched Half-Octave Filters. (P X). Amateur Packet Radio. (G). Microwave band Designs. (P). Radial Line Stub Design. (T X).

73 MAGAZINE — March 1988. Antenna issue. (G). Reviews and Construction suggestions.

QEX MAGAZINE — April 1988. ARRL Experimenters' exchange and AMSAT Satellite journal. 125 Watts on 903 MHz. (C). Parabolic Reflectors. (T).

BREAK IN — April 1988. NZART Annual Conference. (G).

AMSAT-UK OSCAR NEWS — April 1988. General news. Details of OSCAR 9. MIR Satellite special supplement. (G).

VHF COMMUNICATIONS — 3/1987. Electronically Switched Attenuators. (P). Broadband HF Power Amplifiers. (P). SSB Signal Processing. (P).

CQ MAGAZINE — March 1988. World-Wide SSB Contest results. (G). Simple Antenna System. (P N). Hamoholic Testimony. (G). Mysterious Interference solved. (G N).

QST — March 1988. ARRL Annual meeting. (G). Radiosport in the USSR. (G). Traps for VHF Interference. (P N).

ar

TELEVISION SCREEN EYEGLASSES

In the next five years, scientists plan to develop eyeglasses with tiny colour television screens instead of lense.

The device will enhance what vision is left in people who suffer from degenerative eye disease.

The proposal comes from researchers at Johns Hopkins Wilmer Eye Institute in Baltimore, USA, who, with NASA's National Space Technology Laboratories, will develop and manufacturer the system.

The device will resemble wrap-around sunglasses with small lense at the upper outer corners, connected by optical fibres to a battery-powered computer at the waist.

The lense capture the field of vision, and images will be conveyed to miniature solid-state television cameras in the waist pack.

The images are computer processed and displayed on the television screens which will replace normal glass lenses.

HOTEL DELTA ZERO ANTARCTIC

Listen on the DX bands for HD0AE, which stands for "Antarctic Ecautoriana". It is believed to be the first time a station from Ecuador will be active from the Antarctic continent.

HOW TO WORK IY4M ROBOT

A robot beacon is operating on 28.195 MHz. It puts out a call in CW at 15 words per minute signing "IY4M IY4M" followed by a 15 second long note, interrupted by three dots every three seconds.

To finish its calling transmission it sends "IY4M ROBOT QRV QRV". At this point the robot switches to receive for about 30 seconds and will automatically adjust both its transmitting and receiving speed to the speed of the incoming signal.

To contact IY4M, listen for the beacon sending IY4M ROBOT QRV. Send your call twice being careful not to leave any extra space between your characters.

If the robot hears you, it will ask for a signal report then send you a report and a greeting in English, or one of several other languages.

SOLUTIONS TO LAST MONTHS PROBLEMS

1. R4 in parallel with 100 ohms of R3 = 2 amps.
R5 and R6 in parallel = 100 ohms also and are in parallel with R4.
Therefore two amps flows through R4, R5, R6 and 7.5 amps is the total current through the circuit.

2. Currents =

$$\frac{E \pm \sqrt[2]{E^2 - 4R1W}}{2R1}$$

Currents =

$$\frac{25 \pm \sqrt[2]{25^2 - 4x50x2}}{2x50}$$

Currents =

$$\frac{25 \pm \sqrt[2]{625 - 400}}{100}$$

Currents =

$$\frac{25 \pm 15}{100}$$

25 + 15 / 100 = 0.4 amp and 25 - 15 / 100 = 0.1 amp.

The two circuit currents are, 0.4 amp and 0.1 amp.

—Contributed by Frank Wright VK2BZ, 18 Second Street, Blackheath, NSW. 2785

WARRANTY AND INDEMNITY
Each advertisement is accepted for publication on the condition that the advertiser and/or advertising agent warrant to the Publisher that the matter within the advertisement in no way contravenes State or Federal legislation, copyright or trademark laws or any other statute, regulation or law whatsoever. The advertiser and advertising agent both jointly and each severally indemnify the Publisher, his agents and officers against all claims, demands, penalties, liabilities and damages of any nature however caused, including negligence or otherwise on the part of the Publisher or his agents and officers. Acceptance of the advertisement for publication shall be understood to be in consideration for the granting of this indemnity which shall be implied in the submitting of each advertisement for publication without the execution of any other document.

All copy for inclusion in the **September 1988** issue of *Amateur Radio,* including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162,** at the latest, by **9 am, July 18, 1988.**

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write ***each*** on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
$22.50 for four lines, plus $2.00 per line (or part thereof)
Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office please . . . 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

RADFAX: Hires radio facsimile Morse and RTTY program for IBM PC/XT on 360K 5¼" floppy + Doc. Need CGA SSB HF & AEM3500 project. Support the author first $30 each + $3 postage. Send orders to 42 Villiers Street, New Farm, Qld 4005. Ph: (07) 358 2785.

WANTED — NSW

ARGONAUT TEN-TEK: in good condition; or comparable low power rig for portable use. Dick VK2AHU, QTHR. Ph: (048) 71 2270.

CIRCUIT DIAGRAMS & MANUALS: for Kenwood 2200G. Also Yaesu FP-301 power supply. Also General Coverage Receiver. John VK2VJD. Ph: (047) 51 4257.

YAESU FT-101B: in good condition. Reply to VK2GZ, 43 Bringagee Street, Griffith, NSW. 2680 stating price wanted, QTH & condition of same. Ph: (069) 62 3576.

KYOKUTO 2025A MK2: FM 2 metre transceiver. Prefer good condition original owner. Norm VK2ENT, C/- PO Wyndham, NSW. 2550 or Ph: (064) 94 2192.

SIGNAL GENERATOR: capable of covering from about 150 kHz to 220 MHz. Advance type 62 or similar. Ross VK2CRJ. Ph: (049) 32 6742.

WANTED — VIC

DICK SMITH 70cm EXPLORER: Condition no important. Price to VK3LS, QTHR. Ph: (03) 379 3619.

SERVICE BOOK & CIRCUIT: for receiver Hallicrafter SX-110. Photostats will suffice. Also pair Brown Junior head phones, speaker & Cats Whisker type crystal detector. Willing to pay reasonable prices. Please contact Neil VK3YLW, 52 Fifth Street, Mentone, Vic. 3194. Ph: (03) 580 4312.

TELETYPE MOD 14 TAPE DISTRIBUTOR: Siemens T send 77 Distributor. Wiring details of Siemens T Loch 15a. Teletype tapes or pictures for collection. Colin Gracie, PO Cavendish, Vic. 3408. Ph: (055) 74 2319.

WANT TO SWAP: Any of these official radio service manuals Nos: 4, 5, 8, 9, 12, 13, 14, for three others — Nos 10, 6, 2. Will sell other 4 at $7.50 each plus freight. Contact Bill VK3BWS, QTHR. Ph: (052) 9 3337.

YAESU LINEAR AMPLIFIER: FL-2100Z or FL-2100B. Must be in perfect working order preferably with new tubes. Roth Jones. Ph: (03) 725 3550 (AH) or (03) 877 6655 (BH).

WANTED — QLD

ELECTRONIC KEYER: Dmitri Perno VK4BDP, 110 Panorama Drive, Nambour, Qld. 4560. Ph: (071) 41 6026.

WANTED — SA

HEALING TV: Wanted for 12" Black/White Healing solid state TV AC/DC. Turret 13 channel tuner or biscuits for channels 3 & 4, Tuner type TUR 4D3AR-2CM4A-TNV-360. Hugh VK5BC, QTHR. Ph: (085) 82 2690.

WANTED — TAS

GENERAL RADIO: Type 874 Airlines, Pads, Adapters, Attenuators, Terminations, etc. Trevor Briggs VK7TB, 9 Norfolk Street, Perth, Tas. 7300. Ph: (003) 98 2118 (AH) or (003) 24 4289 (BH).

FOR SALE — NSW

TWO-METRE TRANSCEIVERS: One IC-22, good average condition, many repeater channels. $130. Also, mint condition Azden PCS-3000 extended control. $300. Scanning, etc. VK2SW, QTHR. Ph: (069) 22 6082.

BEAM ANTENNA — 204BA: 4 element monobander on 20 metres. $200. Rotator, Emotator, heavy duty, 1103MSAX with controller, manuals. cables, etc. $300. Tono-Theta 7000 Communications Computer, with TOEI mono monitor, complete with cables, manual, etc. $200. B W Thomas VK2FD, QTHR. Ph: (063) 62 5705.

COLLINS 75S RECEIVER: 32S transmitter. 30L1 RF Linear with handbooks & 240/110V transformer $1000. HG TH6DXX Thunderbird. $450. Tower, 2 section wind-up 50 ft with guys & fittings. $190. Two metre FT-227RB transceiver. $200. VK2AJX, PO Box 1135, Bathurst, NSW. 2795. Ph: (063) 31 4376.

COMPLETE KENWOOD SYSTEM: TS-820S transceiver (incl MC-50 mic) with match R-820 receiver offering full remote VFO facilities & covering all shortwave broadcast bands. The SM-220 monitor-scope is fitted with a Pan Adaptor. Also SP-820 speaker & AT-200 antenna tuner. Complete matching system looks too good to split & is yours for $1750. Tony. Ph: (02) 226 4606 (BH).

COMPLETE STATION: FT-707 & power supply. As new condition. Book, microphone, key, headphones, car cradle, aerial tuner EAT-300. $1100 ONO. George VK2YT, QTHR. Ph: 625 2602.

CORNELL-DUBLIER VHF ANTENNA ROTATOR: with control box & 15m cable. Good condition. $60. Ceramic silver-plated roller inductor, 20 micro-H, 18 x 9 x 6 cm. Excellent condition $30. Paton pre-war serviceman's multi-meter, collectors item. Large 0-1 mA movement, battered, but working. $10. Freight buyers care. VK2AHR, QTHR. Ph: (064) 95 9275.

DENTRON ANTENNA TUNERS: (USA made). One model MT3000A 2 kW $600 & one model 160-10 1 kW $400. Both never used. Kel VK2MW. Ph: (02) 449 2439.

FT-200 & POWER SUPPLY, SPEAKER: good condition. Black face, cables, fan, Japan & New Zealand books, H/phones, valves, mic. $400. VK2QB, QTHR. Ph: (049) 43 3392.

TANDY DPM-105 DOT MATRIX PRINTER: manual & cables. Never used. $250. Ross VK2CRJ. Ph: (049) 32 6742.

WILSON WE-800 2 METRE VHF FM TRANSCEIVER: 144-148 MHz, 1 or 12 watt output, portable or base operation. Has internal Nicad batteries. $300. New Hidaka V5-33 triband Yagi $550. Hidaka V5-41 10-40 metre vertical $225. Emotator 5025AX Antenna Rotator, new. $495. Ph: (02) 817 4803.

YAESU FT-110 LINEAR AMPLIFIER: Never used, suit FT-301S or FT-7. $300. No offers. VK2DMY. Ph: (02) 957 3964 or (043) 23 3109.

YAESU FT-401B: in very good condition. Fully aligned on all bands. Output over 150 watts on all bands. Finals neutralised, carrier xtals adjusted. With mic, carton & handbook. Price $400 ONO. AMATEURS ONLY. Jack Evans VK2CX, 25 Tomaree Street, Nelson Bay, NSW. 2315. Ph: (049) 81 1582.

YAESU HF TCVR FT-102: Spkr SP-102. Hardly used. Dcd Estate. Ph: (02) 525 5559.

FOR SALE — VIC

BEAM: CE35DX 5 element triband beam 10/15/20 $230. Siewa SV-230 13 channel 2m FM transceiver, 30/5 watts $80. Model 15 teleprinter with power supply complete with full manuals & home-brew modem. $50. Erik VK3AKJ, QTHR. Ph: (03) 756 6958.

COMPLETE DRAKE STATION: T-4X tx, R-4B rx, matching spkr/pwr sup, speech processor, Ameco PCL-P preamp, digital dial, factory tuned. Many spares included. The lot $850 ONO. Bill VK3WK, QTHR. Ph: (055) 67 1048 (AH).

DECEASED ESTATE OF NORM COLLINS VK3AOC: Kenwood TS-430S $925. Kenwood PS30 Power Supply $350. Kenwood AT-130 $125. Call Keith VK3BVK. Ph: (03) 528 3674 (AH). Licensed Amateurs Only.

ICOM 720A: $900 ONO in box. VK3BSM, PO Box 339, Moe, Vic. 3825. Ph: (051) 27 4229 AH.

ICOM HF TCVR: $1800. 2 metre gear, IC-271H 100W new $1500. IC-25H 45W $550. DSE Commander prof tuned, SM-5 mic $65. P supplies Icom PS-30, PS-20, Yaesu FP-757GX available. WW 20 metre beam $200. All as new. George VK3OO (ex-VK3CGK). Ph: (03) 337 4903. Licenced Amateurs Only.

ICOM IC-720A TRANSCEIVER: all amateur bands inc WARC, plus general coverage rx. Has 5 kHz AM, 2.3 kHz SSB & 500 Hz CW xtal filters installed. Matching Icom IC-PS15 20A. Regulated PS, IC-SP3 External Speaker & all handbooks. $900 the lot. VK3ARY, QTHR. Ph: (03) 807 4798.

SKILL DRILL: 10 mm, 2-speed, trigger control with snaplock attachments — 5" circular saw, 6" grinder, sander & jigsaw. Drill power source for attach. Like new. $160. Ph: (055) 62 6016.

FOR SALE — QLD

ICOM IC-701 HF TRANSCEIVER: 200W PEP with speaker/AC Power Supply, as well as IC-RM2 computerised remote control with memory. Ex-cond $850 ONO. VK4AKS. Ph: (071) 47 2367.

ICOM IC-R71A HF COMMUNICATIONS RECEIVER: 100 kHz to 30 MHz, excellent condition with ops manual & circuit diagrams. $950. Noel L40185, 41 Crocker Street, Kirwan, Qld, 4817. Ph: (077) 73 1492.

KENWOOD R-1000: 100 kHz to 30 MHz General Coverage Receiver. 12V/240V, as new $490 ONO. Yaesu FLdx 2000 linear. $690. Kenwood Trio TX-599 & JR-599 tcvr, X-mode, X-band operation, incl 2m. $680 ONO. High performance Datong RF Speech Clipper/Processor, fits onto any tcvr $145. Yaesu FT-501, 400W tcvr, needs repair. $130 ONO. Ask for Jeff VK4ABJ. Ph: (079) 28 1105.

FOR SALE — TAS

KENWOOD TS-930S HF TRANSCEIVER: includes auto-ATU & gen cov rx. $1875 ONO. As new condition. Also, Kenwood TM-221A 2 metre FM mobile 50W (H) 10W (L). As new. $480 ONO. Yaesu FT-75GX. Good condition HF gen cov tcvr. $1100. Daiwa CNA-1001 80-10 (inc WARC). Auto Ant Tuner. $360. As new. Ken KR-400 rotator with control box & cable. Good cond. $200. VK7AN. Ph: (003) 31 7914 (AH) (003) 39 2002 (BH).

KENWOOD TS-130S HF TCVR: $575. SP-120 Ext Spk $30. Yaesu FP-301, 20 amp power supply spkr. $170. Werner Wulf 5 el 10m Yagi. $95. All above in excel cond. Arthur Bell. Ph: (003) 76 1721 (AH) (003) 76 1799 (BH).

FOR SALE — NT

YAESU FT-726R: 6m, 2m, 70cm, all mode transceiver. All options fitted. Good cond. $1990. Yaesu FT-690R, 6m all mode transceiver. As new in carton. $350. Corona HP50UDX, 70cm 10-50W linear. GaAsFET preamp. Good cond. $250. Jeff VK8GF, QTHR. Ph: (089) 52 1016 (AH).

STOLEN EQUIPMENT

The following equipment is missing, believed stolen. Yaesu FT-290R 2m all mode transceiver, including the microphone and mobile mounting bracket. Serial number 5G450016. Anyone with any information about the above should contact Herman Westerhof VK7HW, on his home telephone number (002) 39 9466. Thank you.

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